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COMPUTERWORLD

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Apple mulls radical shift

Can architect behind Apple revamp go the distance?

By Lisa Picarille and Juan Carlos Perez

The Macintosh faithful wanted a miracle worker. So when Gilbert F. Amelio was tapped to be chairman and CEO of Apple Computer, Inc., they held their collective breath and prayed.

Prior to Amelio's arrival, Macintosh users had spent several years watching in horror as the company lost its technical edge, let its substantial profits dwindle and posted losses in three consecutive quarters. Loyalists had given up hope that anyone who took the helm of the beleaguered company could become their spiritual computing messiah, much as co-founder Steve Jobs had a decade ago.

Apple's Gilbert F. Amelio has slowed fiscal decline

Eater Amelio, armed with very respectable credeotials as a former chairman and CEO of National Semiconductor Corp., past president of Rockwell International Corp.'s semiconductor division and an Apple board member since 1994. Even more important, Amelio was pegged as a turnaround specialist. Some of

Amelio, page 14

Macs may embrace Windows to entice enterprise

By Lisa Picarille

The Macintosh community last week was abuzz with reports that Apple Computer, Inc. plans to add support for running applicationa from a variety of other platforms to Copland. The long-overdue operating system is slated for release next summer.

According to five sources close to Apple, the Cupertino, Calif., computer maker has built in to Copland the infrastructure to support software emulation facilities. That would enable Macintosh users to launch any Windows, Windows NT or Unix file or application from within the Mac OS.

Once the non-Mac application is

Windows, page 105

Apple's efforts to appeal to corporations

- License the Mac OS
- Codevelop the Common Hardware Reference Platform with IBM
- Move to industry-standard components, including PCI bus
- Offer Power Macintosh with DOS/Windows compatibility cards
- Support de facto Internet protocols rather than a proprietary messaging system

WHAT'S INSIDE

- Big Blue falls on its face in front of 3.5 billion Olympic Games viewers. **See story, page 6,** *by Mindy Blodgett.*
- Two years after its formation, Bay Networks has gone from a powerhouse to a star-crossed firm said to be fast losing ground to internetworking rivals. **See story, page 8,** *by Bob Wallace and Laura DiDio.*
- Hoping to counter Microsoft's ActiveX-based Web strategy, Netscape today plans to unveil a new set of Java libraries intended to provide secure, reliable communications between Netscape's Navigator browser and SuiteSpot Web servers. **See story, page 10,** *by Kim S. Nash and Frank Hayes.*

Users prompt HP to update its legacy OS

By Jaikumar Vijayan

Hoping to at least temporarily quell growing user anxiety about the future of their investments, Hewlett-Packard Co. plans to announce a major upgrade to its MPE/IX operating system for the HP 3000 platform.

MPE/IX 5.5 is scheduled to be released at HP World next week in Anaheim, Calif., the company confirmed last week. The release will offer improved networking, high-availability features and enhanced interoperability with Unix and Windows NT systems.

HP 3000

The proprietary HP 3000 is one of HP's oldest and most popular midrange computers, but a perceived shift by the company toward Unix and Windows NT is making some

MPE/IX, page 15

Pay-as-you-go apps on tap

By Julia King

Forget coughing up millions of dollars and spending year after year implementing, then upgrading, your complex client/server systems.

There is a new option — or at least a new twist on the old service bureao option: Plug in to a software utility and pay a monthly fee to access packaged financial, human resources and other applications from Oracle Corp., PeopleSoft, Inc. and other top vendors.

Tim Bourgeois, an analyst at International Data Corp. in Framingham, Mass., estimated potential savings of 10% to 50%. "The biggest savings comes in not having to tie up capital upfront. There's not that big initial capital outlay. That's what makes it most attractive," Bourgeois said.

SHL Corp. will begin offering such a service in September. Pricing begins at $5,000 per workstation per year.

And Utiligent in Minneapolis — a spin-off of An-

Apps on tap, page 16

Data Warehousing

PART II: Implementing the plans

Don't become too attached to your warehouse's blueprint. It requires constant rethinking and redesigning – especially once users enter the picture.

See our special section, following page 54

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Editor's Note

People power

As one of the half-dozen people in the U.S. who truly don't care about the Olympics, I have to admit I started paying attention after IBM's spectacular screwup in Atlanta landed in the media spotlight.

How ironic that IBM spent months applying heavy doses of PR torture to persuade the press to write about its $80 million Olympic network, and now the Big Blue troops fervently wish we'd all just go away. Probably the only thing more unpleasant than a frustrated sportswriter is a 4-year-old past due for a nap.

But even more interesting was the way IBM called in human beings armed with fax machines to replace computers as the most reliable source of information (see story, page 6). Perhaps the new slogan for the computer industry should be "It's the people, stupid."

Consider a report last week from a Stanford University economist who has a theory about why investment in computers doesn't necessarily translate into identifiable economic growth. After talking to more than 80 middle managers at large firms, the economist said information technology must be "localized" to have its greatest impact. So just as "All politics is local," so, too, is all information technology.

Ultimately, this suggests that it isn't the business value of technology that matters so much as the people value. Throughout this week's issue, we have stories that point out the human impact and the consequent IT value. Like the way wireless technology is changing the work lives of long-haul truckers, who use onboard computers, satellite and radio technology to stay in touch with headquarters (see story, page 55).

And as companies wake up to the value of their IT people, they are responding with creative ways to attract and keep them. As the lead story in our Managing section (page 70) points out, middle managers with critical IT skills now are offered "lifestyle" perks such as flextime, telecommuting and job-sharing deals.

I just hope the 50 extra programmers IBM rushed in to rescue the company from its massive embarrassment in Atlanta had the good sense to arrive in limousines and charge it to Lou Gerstner.

Maryfran Johnson, Executive editor
Internet: maryfran_johnson@cw.com

The 5th Wave by Rich Tennant

Oracle goes for OLAP gold

By Dan Richman

Users and analysts said Oracle Corp. has emerged as the technology leader in online analytical processing (OLAP) with the latest release of its warehouse-oriented Express Server.

Version 6.0 of the multidimensional database management system, to be announced today, produces query results that appear as a World Wide Web page. It also handles more than twice as many users as the prior version and supports extremely large databases.

Rival Sybase, Inc. has no multidimensional offering — and with its financial woes, it is unlikely to create or buy one soon. Informix Software, Inc., like Oracle, promises Web enablement by year's end. But some analysts said Informix is preoccupied with integrating its MetaCube multidimensional DBMS engine into its On-Line engine.

Database tools

Oracle has settled on separate engines for warehousing and transaction processing, a course observers said is wiser than integration. Oracle's Internet enablement of OLAP means OLAP's cost, which can be thousands of dollars per user in a client/server configuration, is cut dramatically.

This means lower-level employees — not just a few analysts — can use OLAP at their desks, said Rich Finkelstein, president of Performance Computing, Inc., a consultancy in Chicago. "This is a breakthrough."

Express Server 6.0 will ship for Windows NT by Sept. 15, for Unix by Dec. 1 and for Windows 95 by Dec. 31. It costs $3,995 per concurrent user on Unix and $695 per individual user on Windows.

News Shorts

Certifying Web sites

The National Computer Security Association (NCSA) in Carlisle, Pa., next week will begin offering a seal of approval for secure World Wide Web sites. NCSA certification will provide assurance to Web users that sites meet minimum security specifications, which include the presence of firewalls, use of passwords and encryption of sensitive data transmission. One year of certification costs $8,500 and requires organizations to submit to remote tests and a site visit by the NCSA, plus random compliance audits during the year.

Free download from DEC

Digital Equipment Corp. is making available at its Web site altavista.digital.com, a prealpha version of a desktop product based on its AltaVista search engine. Called AltaVista Search My Computer PX, the software lets users quickly search for files stored anywhere on a PC as well as all servers to which the PC is networked. Digital will charge for the software when it ships in August.

Clone vendors to share

Rival Macintosh clone makers **Umax Computer Corp.** and **DayStar Digital, Inc.** are expected today to announce a deal to share multiprocessor technology to promote the Mac OS running on dual PowerPCs as a desktop standard, according to sources briefed on the deal. DayStar in Flowery Branch, Ga., already has a dual-processor Macintosh clone. Umax in Santa Clara, Calif., plans to announce one next month.

SGI preps Web graphics

Silicon Graphics, Inc. plans today to announce new technology for three-dimensional graphics on the Internet. Cosmo 3D is a software tool kit; Cosmo GL is a library of software objects due to go into beta testing today and into general availability by year's end.

IBM cuts Fibre Channel

IBM has dropped plans to develop a variety of networking and storage products based on the Fibre Channel interconnect for its RS/6000 Unix servers to concentrate on its Serial Storage Architecture interconnect.

Pyramid gets new CEO

Edward Blechschmidt has been appointed president and CEO of **Pyramid Technology, Inc.**, succeeding John Chen, who will remain as chairman. Blechschmidt comes to Pyramid from Unisys Corp., where he worked for 21 years and last served as senior vice president and chief financial officer.

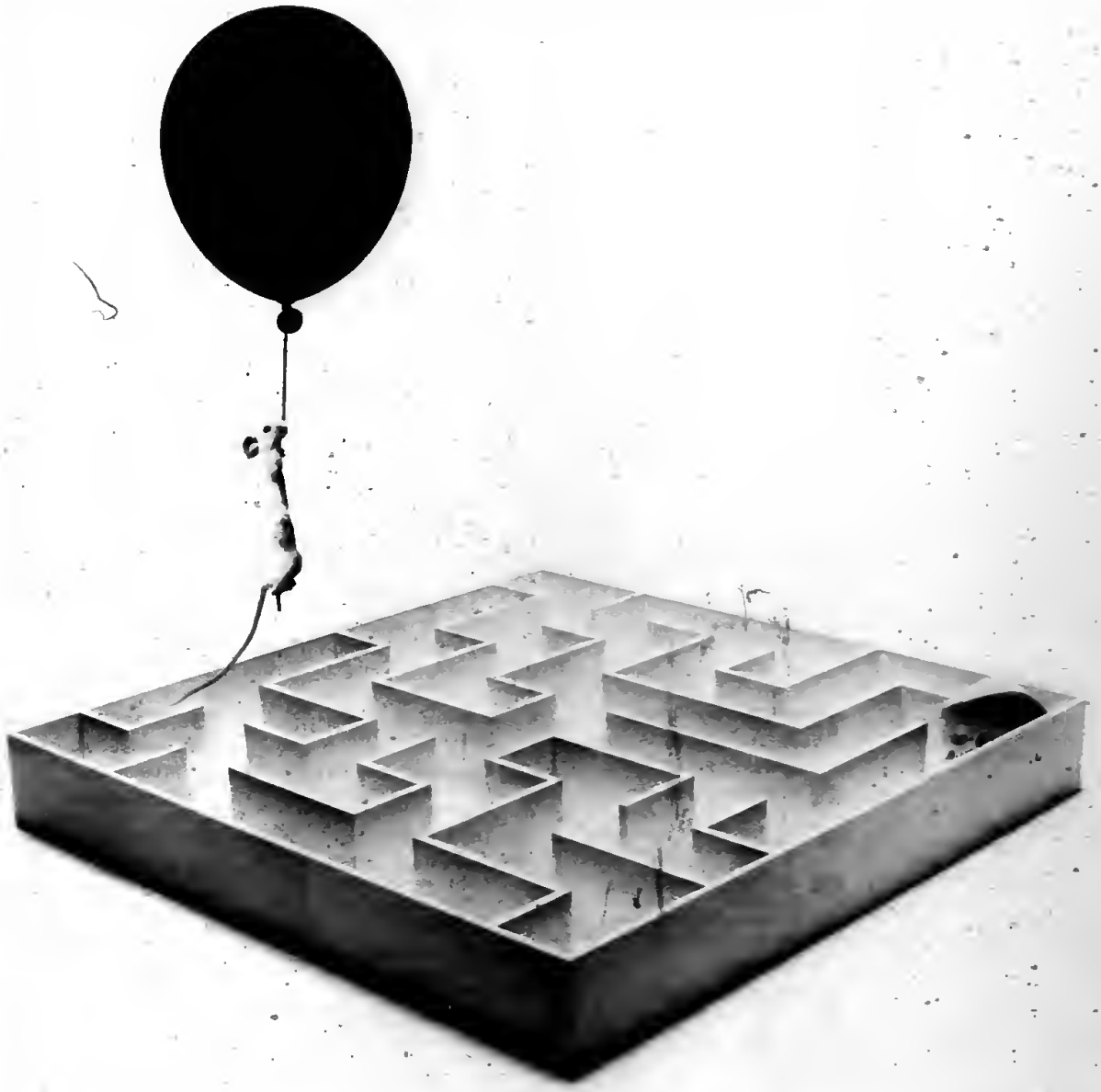
Don't mark the date yet

Major calendaring and scheduling software vendors last week began trying to let users set up meetings and exchange appointment information between their various proprietary products over the Internet.

PacBell, cable firm link

Pacific Bell and **Cox Communications, Inc.**, the nation's fifth-largest cable company, have agreed to interconnect their networks in California, marking Pacific Bell's first agreement with a competitor under the Telecommunications Reform Act.

SHORT TAKES **Wang Laboratories, Inc.** has announced it will purchase I-NET, Inc. for $206.7 million. I-NET is a provider of networking services. ... **America Online, Inc.**'s ANS subsidiary has launched a new service for corporate Internet connectivity that guarantees connectivity 99.5% of the time on both dial-up and dedicated connections. ... **Cabletron Systems, Inc.** has recruited Network General Corp. and Axent Technologies, Inc. to support its Spectrum network management platform with their own products. ... Next month **Lotus Development Corp.** will begin shipping RealTime Notes 2.0, software that lets up to 24 Notes users in different locations work on documents at the same time. ... Lotus also announced plans to work with **PointCast, Inc.**, maker of the PointCast I-Server, to broadcast information stored in Notes databases across corporate intranets. ... **United HealthCare Corp.** has tapped **Unisys Corp.** to run its Golden Valley, Minn., computer processing operations under a multiyear services deal. ... Last week, **Quarterdeck Corp.** announced a third-quarter loss of $22.9 million, on total sales of $16 million, compared with profits of $500,000 for the same quarter a year ago on sales of $28.1 million.



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July 29, 1996

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3Com will deliver Remote Monitoring tools next month.

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This week in COMPUTERWORLD

Visit our new **Forums** page and talk back to *Computerworld* editors and industry consultants on a variety of IS topics.

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Choice cuts

Lifestyles of the tech elite

Who's going to move your yacht cross-country? Give you extra vacation days? An employer who needs your IS skills badly enough, that's who. And you don't have to be a CIO to get those perks.

See Managing, page 70.

Also see our Web site forum at www.computerworld.com

Sales force automation software has become a must-have for executives such as Jack Frame of Corestates Bank, even if the application is as simple as a customer contact manager.

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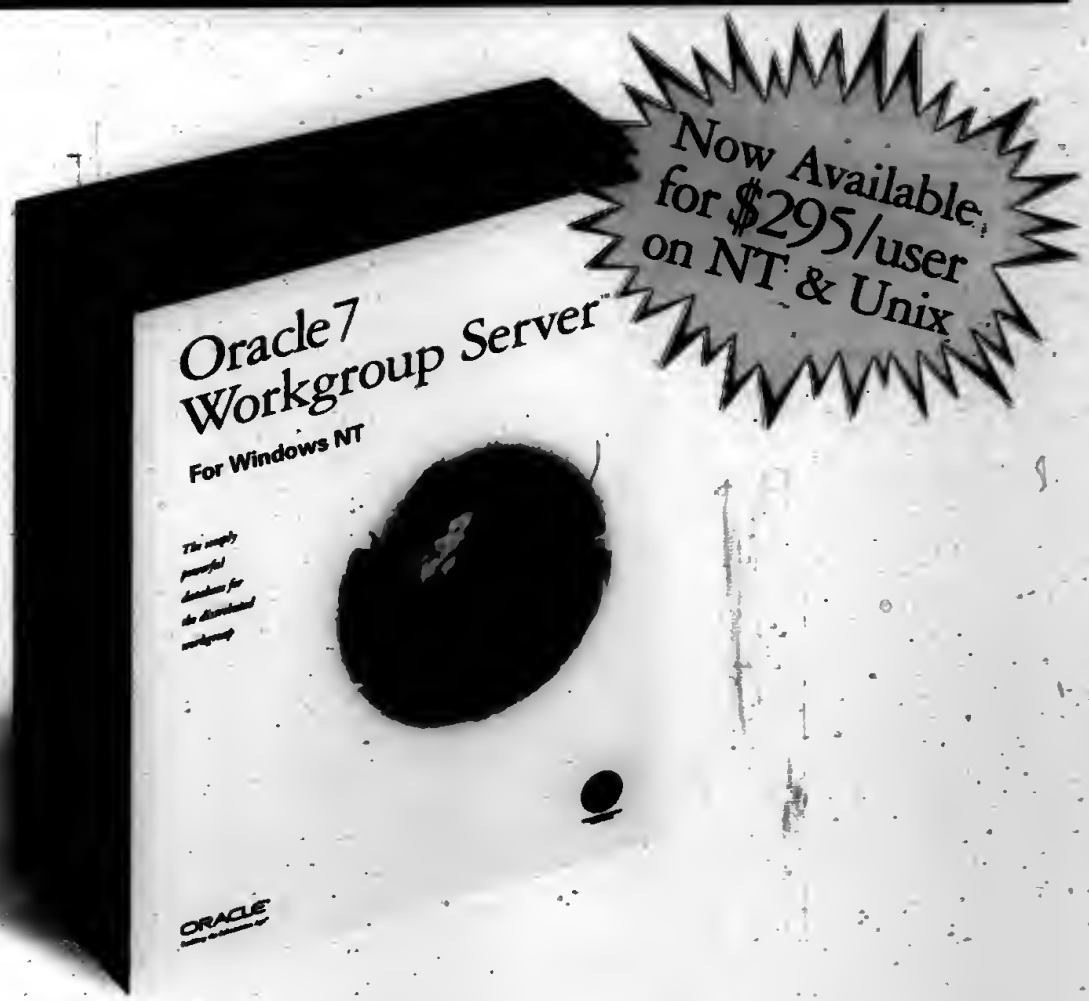

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IBM misses chance for the gold

Olympics results system plagued by inaccuracy, information delivery delays

By Mindy Blodgett

In ancient Greece, runners raced through the streets of Athens delivering Olympic results to interested citizens.

It wasn't supposed to be that way at the Centennial Olympic Games in Atlanta. But serious flaws in the computerized results system — part of the much-vaunted IBM Olympic information network — have led to inaccuracy and delays in the delivery of information to worldwide news agencies.

And in an ironic twist, people are replacing machines as the most reliable source of information. For example, while scrambling to fix the problems, IBM resorted to faxing results to the press center, where runners then brought them to the news agencies.

Glitches also plagued two other IBM Olympics systems: the Info '96 kiosks available to the athletes and the official World Wide Web site (see story below).

A now-humbled IBM beat the public relations drum for months, touting the giant worldwide information system it created expressly for the '96 Summer Games. The network included mainframes, PCs, minicomputers, wireless devices and transmissions lines (see story at right).

But in the end, the company was left with an Olympic-size PR nightmare.

Michael Tierney, sports editor at the *Atlanta Journal and Constitution*, said that although IBM has improved the network, reporters early in the week wasted valuable time gathering statistics.

For more on IBM's Olympic woes visit COMPUTERWORLD www.computerworld.com

The Associated Press wire service decided to go it alone and bypassed the IBM system altogether for its coverage of the track and field events. Instead, reporters used laptops to send results directly from the venue to the AP offices in the press center.

"We don't want to minimize the problem. We didn't get [reporters] what they needed," said IBM spokesman Fred McNeese.

McNeese said IBM tested the systems before the Games, but some of the applications, including the results system for the 13 news organizations, couldn't be adequately tested until the games were under way.

"Until then, it was just a virtual organization. And we were working with 13 news organizations, all of which had their own systems," McNeese said.

Judith Hurwitz, an analyst and president of Hurwitz Group, Inc. in Newton, Mass., said it is difficult to conduct complete tests of a system before an event. "Software gets glitches," she said. "This is what happens. It's just happening in front of an awful lot of people."

Bill Marks, a spokesperson for the Atlanta Committee for the Olympic Games (ACOG), lamented the network glitches but said IBM has done a good job overall.

"I think the story here is that IBM has pulled together a legacy infrastructure that can be used in Sydney [the site of the 2000 Olympics]," Marks said. "They can take this ACOG platform and build on it."

IBM officials said they encountered the following problems:

- The custom application code written for the results software was flawed. When computers retrieved information from the database, inaccurate and garbled information was delivered. For instance, an athlete might be reported to be 20 feet tall. Programmers spent last week rewriting code, IBM officials said.
- IBM's network transmission system was very slow, and it was set up so that only one news organization at a time could receive information. IBM recoded its mainframe queuing system so that transmissions were sent in broadcast form rather than sequentially.
- Less-important information, such as start times, was sent over the wire feed before more important developments, such as world records. Programmers created a prioritization system by midweek.

Negative publicity

During a meeting last week with financial analysts, Richard Thoman, chief financial officer at IBM, acknowledged that the negative fallout "is obviously something that we're most concerned about."

IBM wants "to learn from this so we don't have a repeat when we roll these kinds of things out to our customers," Thoman added. As for what IBM can do to counter the bad publicity emanating from Atlanta, he said, "All you can do is fix the systems as best you can at this point."

Press reports that IBM Chairman Louis V. Gerstner had been summoned to Atlanta to address concerns about the system were inaccurate, according to an IBM spokeswoman. She said, however, that "he is aware of the problems and is concerned."

Senior editor Craig Stedman contributed to this story.

Olympic bytes

Here are some facts about IBM's Olympic-size efforts in Atlanta:

- Testing and planning of the IS network took two years.
- A hundred applications are spread across 30 venues.
- The games are run on a three-tier client/server system with four IBM System/390 mainframes; 300 networks, including Token Ring, Asynchronous Transfer Mode and frame-relay; 7,000 IBM PCs and ThinkPads; 80 AS/400 servers; and two RS/6000 SP massively parallel processors.
- IBM acted as systems integrator, coordinating the technology of other vendors, including Xerox Corp. and Swatch.
- IBM donated approximately $45 million in goods and services, including 87 software developers, 200 workers from Integrated Systems Solutions Corp. and 5,000 technical volunteers.
- The Olympics information system is divided into four components: the commentators' information system, which provides live feeds to broadcast, print and radio; Info '96, which provides electronic mail, news, local weather information, schedules and athletes' biographies to athletes, coaches and reporters; a Web site; and a games management system built on AS/400 servers, which coordinates the 60,000 volunteers.
- The system supports 150,000 users, including 15,000 media organizations, 15,000 athletes and 31,000 employees.

— Mindy Blodgett

The whole world is watching

One of the lessons learned from last week's IBM Olympics IS fiasco may be: Don't mislead or tick off the press.

IBM had promised a system so high-tech that reporters would be able to receive results over their pagers. Instead, they were forced to send assistants to venues and to copy results from telecasts.

The glitches led to a daily stream of critical news about the IBM network and a major public relations headache.

Consider the following:

- The European Broadcast Union (EBU), a group of 88 television networks, last week threatened to demand money back from ACOG because of the information foul-ups and other substandard working conditions. The EBU paid $250 million for the rights to broadcast the Games.
- IBM called in 50 additional programmers and technicians to tackle the problem of inaccurate results and information on athletes. For instance, a software glitch meant that wrong statistics — such as giving an athlete's age as 97 when it was actually 22 — were routinely fed to the news services. Results were sent for events that had yet to take place.
- IBM set up computerized information kiosks called Info '96 for the athletes, coaches and reporters. But the kiosks repeatedly crashed, and athletes were unable to access their electronic mail and other information.

"IBM set up these high expectations with all this incredible hype," said Bob Djurdjevic, an analyst at Annex Research, Inc. in Phoenix.

"They ensured they would have the limelight, and they ended up embarrassed," he said.

— Mindy Blodgett

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Bay drifts off course in rough water

By Bob Wallace and Laura DiDio

Two years after its formation, Bay Networks, Inc. has gone from a powerhouse to a star-crossed firm that analysts say is quickly losing ground to its internetworking rivals. Bay — formed through the merger of hub maker SynOptics Communications, Inc. and router power Wellfleet Communications Corp. — last week announced the departure of CEO Andy Ludwick and earnings that disappointed financial analysts.

In recent months, Bay shipped sorely needed modules for its flagship switching hub three years late. And the company admitted that sales of its pricey Fast Ethernet switch are dropping.

Bay's battles

MARCH APRIL MAY JUNE JULY

- Bay begins to ship switching modules for the System 5000, which were originally promised in 1993
- Bay splits into two business units: Enterprise and Internet/Telecom
- CEO Andy Ludwick announces plans to step down
- Quarterly earnings disappoint financial analysts
- Bay restructures its sales force

Missed opportunities

"They're getting their asses kicked," said Al Tobia, a principal at Montgomery Securities, Inc., a San Francisco brokerage. "Their history over the last two years is one long string of missed opportunities, contracting market share and delays in shipping key products like the 28000 Series switching hub."

At the time of the merger, Bay was the largest of the "Big Four" internetworking vendors. "Now Bay is half the size of Cisco and, worse, they're not growing," Tobia said. He said Bay has slipped from No. 1 to No. 3 in stackable hubs.

Analysts questioned why the company shunned SynOptics' technology and bought switching through the acquisition of start-up Centillion Networks, Inc.

"Any [management] change is good, and they might as well start with Ludwick because he wasn't getting the job done," said another financial analyst who asked not to be identified. "What can you say about a company president [who] has to scuttle his company's line of switching technology and buy it from a start-up when that was supposed to be SynOptics' expertise?"

Users and analysts said Bay's major problem has been the gaping holes in its product portfolio.

"They need to start getting products out the door oo time, for starters," said John Scoggin, supervisor of network operations at Delmarva Power & Light Co. in Newark, Del., a former Bay customer.

"And I don't think there's been a major East Coast/West Coast merger where both parts remained equal and the resulting company succeeded," he added.

Other users expressed concern aboot Bay's current situation but said the firm's problems aren't serious enough to cause them to switch vendors yet.

"So far, Bay's corporate woes haven't impacted us, and they remain responsive when we have any technical issues," said Mark Shahan, LAN administrator at the state of California's Department of Toxic Substances Control in Sacramento.

"We will continue to monitor the situation but probably won't switch vendors unless Bay decides not to support our current 3000 Series switches or gets into a big financial jam," he said.

Cisco is buying more market share. See page 55.

3Com's Traffic Manager *gives an overall view of traffic patterns and helps track the performance of network segments and application service*

3Com monitoring tools give detail in wide view

By Patrick Dryden

3Com Corp. this week will unveil Remote Monitoring (Rmon) network management tools that give users a cohesive view of the entire network rather than a hodgepodge of traffic reports.

Such an overall view of network traffic would help administrators determine whether they need more bandwidth or a usage policy, for example.

Network management

3Com gained the tools in March when it acquired Axon Networks, Inc. in Newton, Mass., for $64 million. As a result, 3Com's Transcend network management line includes stand-alone and stackable probes, agent software for adapters and internetworking gear and performance analysis applications.

That expected product blend brings 3Com up to date and closer to Bay Networks, Inc., one of the internetworking leaders that has perfected an Rmon support strategy, said Brian Burba, an analyst at International Data Corp. in Framingham, Mass.

"The big bang here is that we will be able to monitor network activity in more detail," said Walter Fitzgerald, senior vice president of information technology at Yamaichi International America, Inc. He just completed a network for 300 users at the securities brokerage in New York that uses 3Com's Rmon-enabled gear and analysis software. "Now we can track packets as they cross the network, and we'll be able to see what application information is inside," Fitzgerald said.

Ooe beta tester, who asked to remain anonymous, said he had used Axon and 3Com management tools separately. He welcomed the product integration and new life for Axon's Traffix Manager software, which tracks end-to-end application traffic based on Rmon 2 surveillance.

However, monitoring capabilities pose new problems for 3Com and its users, Burba said.

Like other Rmon vendors, "3Com provides a great pair of binoculars but can't tell users where to focus," Burba said.

Until automated network management becomes a reality, vendors must help users know what data to gather and how to interpret it, he said.

Other Rmon 2 products are ready to ship. See page 55.

IBM faces Xylan product overlap

By Bob Wallace

Last week's alliance with technology-rich start-up Xylan Corp. will help IBM plug gaping holes in its switch line. But Big Blue must reconcile the resulting two product lines while it catches up to rivals.

Although Xylan's feature-laden and versatile LAN switches will fill the massive void between IBM's workgroup and campus backbone systems, they will also cause overlap in several areas, analysts said.

"It's awfully late in the game for IBM to start integrating different product lines," said Eric Hindin, a senior program manager at The Yankee Group, a research and consulting firm in Boston. "Had they taken this step a year ago, I'd be much more optimistic about their chances than I am now."

IBM envisions the two Xylan switches — OmniSwitch and PizzaSwitch — linking IBM's Ethernet, Token Ring and 25M bit/sec. Asynchronous Transfer Mode workgroup LAN switches to a campus backbone network. The network would comprise IBM's high-end 8260 systems, which it resells from Chipcom Corp.

"But things aren't quite as complementary as IBM would have users believe," Hindin said. "The Xylan OmniSwitch is as much a backbone switch as the 8260, which could push the 8260 out of a job. And why would a user want to mix two backbone switches in a network when he can use just one?"

Analysts also see the potential for friction between IBM's 8271 workgroup Ethernet switch and Xylan's PizzaSwitch.

"The 8271 is more expensive than the PizzaSwitch and lacks the remote monitoring functionality that the Xylan switch has," Hindin said.

Asked about the future of the two product lines, one IBM executive said, "at this point in time, we're not announcing that any products will go away. Rather, we'll enhance and converge the products over time."

"IBM is not one of the top three or four vendors that users consider for switching," said Audrey Apfel, research director at Gartner Group, Inc. in Stamford, Conn. "And the alliance alone doesn't make customers want to go with IBM as their major internetworking vendor."

Management first

IBM said a high integration priority is letting users manage the two companies' switches from IBM's widely used NetView management system.

"IBM has the best R&D of any vendor I've ever seen, but they just can't execute on it, which is regrettable," said Earl Perkins, a network manager at Entergy Systems, Inc., a Gretna, La.-based power provider for several southeastern states. "Nobody can plan better than IBM, but as a result of not executing, they have to enter these alliances to fill gaps in their product line."

"Cabletron, Cisco and Bay already have a proven record in switching, so we use them," said Barbara Maaskant, executive director of information services at Emory University's business school in Atlanta.

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Number of Databases Supported Directly	8	Ø	1

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Netscape delivers tools for building Web apps

By Kim S. Nash and Frank Hayes

Hoping to counter Microsoft's ActiveX-based World Wide Web strategy, Netscape today will unveil tools to let developers create an object-oriented data pipeline between Web browsers and servers.

Netscape Communications Corp.'s new tool set — the Open Network Environment (ONE) — is based on the Common Object Request Broker Architecture (CORBA) from the Object Management Group. It will also let Web-based applications connect to legacy systems and data.

"These are exactly the kinds of things we need to make our applications that run on browsers more robust," said Winn Stephenson, vice president of network computing at FedEx Corp. in Memphis.

Netscape's object framework includes an improved version of its JavaScript scripting language and a set of Java-class libraries for building applications with CORBA connections.

Pieces of ONE

Because the system conforms to the CORBA standard, it can connect to object-oriented software from IBM, Sun Microsystems, Inc., Digital Equipment Corp., Hewlett-Packard Co. and other vendors.

"Objects are moving onto the Internet, so there's a need for agreement on a way to make them communicate there," said Tim Sloan, an analyst at Aberdeen Group, Inc. in Boston.

The ONE technology will be built in to a version of Netscape's Navigator browser due by year's end and the SuiteSpot servers due early next year. Beta-test versions of some Java libraries will become available today, Netscape said.

> "This will be something Microsoft will have to come to grips with."
> — Stan Dolberg, Forrester Research

FedEx, Deere & Co. and other big user companies have spent several years designing connections among existing data and services and CORBA-based networks. ONE should make it easier to build Web-based applications that access those enterprise resources, especially legacy mainframe systems, said Mike Kennedy, an analyst at Meta Group, Inc. in Burlingame, Calif.

Microsoft notices

Microsoft Corp. has dragged its heels on supporting CORBA, in favor of pushing its own Distributed Common Object Model, which includes ActiveX.

In a pre-emptive strike, Microsoft last week rushed out an announcement about plans to make ActiveX an industry standard. The company next month will pitch ActiveX to an unnamed, newly formed group of vendors.

"[ONE] will be something Microsoft will have to come to grips with. It could be a nightmare for them," said Stan Dolberg, an analyst at Forrester Research, Inc. in Framingham, Mass.

A dozen tools vendors, including Borland International, Inc. and Symantec Corp., have agreed to support ONE.

But users will have to wait at least three to six months for tools specifically designed to support ONE. The wait will be at least that long for browsers and servers that can run ONE-built applications.

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Administrative tools to firm up Green River

Novell says utilities will simplify NetWare installation

By Laura DiDio

Novell, Inc. last week announced a set of administrative utilities for its forthcoming version of NetWare, which were designed to automate network installation and set-up and save management time.

Green River's NetWare Administrator (NWAdmin) is a Windows-based graphical utility that lets users create and manage network objects and devices within Novell's Directory Tree database. NWAdmin should simplify and speed up the upgrade process by automating the configuration of network adapters, disk drives and protocol stacks, according to Novell.

Robert Harbison

The NWAdmin features will be bundled into NetWare 4.11 (codenamed Green River), which is due in September, company officials said.

"The key message is that NWAdmin will let Green River install itself," said William Donahoo, senior director of product marketing at Novell.

Josh Turiel, director of information services at Ad Life Marketing, Inc. in Norwood, Mass., wasn't so effusive, but he agreed that the utility will simplify NetWare installation.

"Green River won't install itself, but it will be a damn sight easier. Right now, you have to put way too much thought and effort into even a rudimentary NetWare 4.1 install. The first time I attempted it, it took me four hours to complete," Turiel said. "The enhancements in NWAdmin correct many of the small, nagging pain-in-the-butt configuration issues that are so time-consuming. It could cut my configuration time 50% to 75%," he said.

In interviews last week with *Computerworld*, eight users and analysts agreed with Turiel. Until now, they said, many of the management tasks associated with NWAdmin proved daunting for all but the most technically proficient network administrators. The forthcoming NWAdmin utilities correspond to four utilities in rival Microsoft Corp.'s Windows NT Server — File Manager, User Manager, Print Manager and Server Manager.

"I'm all for anything that takes the guesswork out of the NetWare 4.11 Green River setup and installation," said Hal Drury, a user support specialist at The Lahey Hitchcock Clinic in Lebanon, N.H.

Better management

Robert Harbison, an expert NetWare user and president of Network Integration Consultants, Inc. in Sausalito, Calif., a systems integration firm, said the automated configuration and installation capabilities in NWAdmin represent a major advancement.

Harbison said Novell has made NWAdmin much more manageable. The graphical user interface has also been improved, so it's much easier to find users and objects, he said.

Microsoft links C++, SQL

By Justin Hibbard

Microsoft Corp. last week gave Visual C++ developers the keys to the corporate database.

The software giant's Visual C++ Enterprise Edition will let developers view, edit and debug stored SQL database procedures and the C++ functions that call them, all within the same environment. The product was unveiled last Monday at Microsoft's developers conference in San Francisco.

The product's debugger is the first ever to debug SQL and C++ code together. If the feature gains support from developers, other vendors may support it in their tools and databases to stay competitive.

Beside its database features, Visual C++ Enterprise Edition sports all the new features in Visual C++ 4.2, which was announced July 16. Version 4.2 updates Visual C++ 4.0, which is used largely by commercial software developers. But the Enterprise Edition is targeted at corporations developing client/server systems.

A new pane in the Enterprise Edition displays SQL code, and the integrated SQL debugger lets developers step from a C++ function running on a client to a SQL procedure running on a remote server.

Boosting productivity

The features are "a big help to productivity," said Mark Pawlowski, a corporate developer at JM Family Enterprises, Inc. in Deerfield Beach, Fla. Debugging SQL and C++ code will save hours of time, he said.

In many IS shops, C++ developers and SQL server administrators wear separate hats. But C++ developers sometimes need access to the SQL procedures that their applications call, said Joe Hocker, internal web manager at Pacific Telesis Group in San Ramon, Calif.

If vendors support the new features in Visual C++ Enterprise Edition, it would benefit companies that use multiple client/server applications from different vendors, said Sandra Taylor, an analyst at The Standish Group in Newton, Mass.

Currently, only SQL Server 6.5 has application programming interfaces that connect to the Enterprise Edition's SQL debugger. But Joe Quagliani, group product manager for Visual C++, predicted that other database vendors will adopt the interfaces.

Officials at database vendors Oracle Corp. and Sybase, Inc. said they would support the interfaces only if customers demand it.

CASE tools are back. See page 45.

Help for harried help desk

Intel package to reduce PC house calls

By Patrick Dryden

Intel Corp. wants to reduce the number of house calls and the amount of misinformation that make PC support so costly.

The firm last week disclosed plans to ship software that will integrate its LANDesk workgroup management tool kit with homegrown help desk functions backed by an expert system. The package, scheduled for release in October, promises to streamline fixes and eliminate the delay and expense of dispatching technicians to the caller's PC.

"If Intel delivers what they promise, this new tool will attack a big problem — that most help desks today can't solve hardware and operating system problems without physically checking the machines," said Rick Villars, an analyst at International Data Corp. in Framingham, Mass.

LAN management

But some current LANDesk users won't believe it until they see it.

"I'm afraid we'll still have to go out to touch the machines," said Tom Anderson, administrator of a 500-user network at an Amoco Corp. manufacturing site. He uses LANDesk's remote control capability to fix distant PCs, but that tool depends on healthy software agents and network links.

Villars said that by strategically linking the tool kit and the systems through a knowledge base, Intel slips ahead of competitors McAfee Associates, Inc., Seagate Enterprise Management Software, Inc. and Symantec Corp.

While Intel tries to position itself as the source for PC administration tools designed "to make Intel-based systems more attractive and less painful to use," the complexity issue persists, he said.

Villars said Intel's package will require significant setup to perform as intended. Intel officials said the package will include service and training.

"This strikes me as software that will require a lot of work to make useful," Anderson said. "Having all those tools at your disposal sounds very helpful, but one package gets unwieldy when it tries to do everything."

Intel may have misread user needs, said Kei Lee, network analyst at Chevron Information Technology Co. in San Ramon, Calif. "Companies our size already have a help desk database, so they're a little late. From a business point of view, [Microsoft Corp.'s] SMS provides most of what Intel is trying to do, so we will stay with SMS," Lee said.

Intel plans to release the name and price of the product in October. It will integrate desktop inventory, diagnostics and remote control with trouble-ticketing and problem management functions.

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IBM ships first batch of OpenDoc components

By Sharon Gaudin

After months of hype and expectations, IBM this week will release its first two packages of OpenDoc components.

The object-oriented software components — one for personal information management and another for database tables — are IBM's first OpenDoc offerings. OpenDoc is a standard architecture for plugging together software components to create distributed applications.

OpenDoc was first announced three years ago by a coalition that included IBM, Novell, Inc. and Apple Computer, Inc. Novell dropped out, but Apple released the first OpenDoc component, Cyberdog, in May. An IBM spokesperson recently said IBM will ship 50 components by year's end.

Analysts and users had very different views of IBM's OpenDoc initiative. David Kelly, an analyst at Hurwitz Group, Inc. in Newton, Mass., said IBM lost momentum in the months between announcement and delivery.

Application development

But Karen Boucher, an object technology market analyst at The Standish Group International, Inc. in Dennis, Mass., said IBM is in the perfect position in the object arena. "They got started at the right time. IBM sees objects as their comeback," Boucher said.

Boucher warned that Microsoft Corp., with its OLE and ActiveX technology, is a formidable competitor. She said IBM needs to integrate its object-oriented products, including VisualAge, System Object Model, OpenDoc and the CommonPoint framework.

David Bowser, distributed information architect at Cummins Engine Co. in Columbus, Ind., said IBM's plans for OpenDoc have been poorly communicated.

"It's been disappointing," said Bowser, who has been building his own OpenDoc components and waiting for components from IBM and other vendors. He said it hasn't been clear to him which components are coming from IBM and which components he should build himself.

But the systems manager at a major bank, who requested anonymity, was more upbeat about the flow of OpenDoc components from IBM. "It will save us quite a bit — both in time and money," the manager said. "We [can] make our own components, so it's a matter of when we can stop making our own and buy them. . . . We might actually be pretty interested in these components," he said.

Boucher said IBM needs to move its production into high gear. "One of the big problems when you compare OpenDoc and OLE, which is now ActiveX, is that OLE components are very easy to find. OpenDoc doesn't have the same breadth of availability," she said. An IBM official said IBM is working on multimedia and Internet-based components. Several other vendors are set to launch OpenDoc components in August.

Club OpenDoc is Pak pickup spot

IBM's first two OpenDoc components will be available Aug. 1 at the Club OpenDoc section of IBM's Web site (www.ibm.com).

The components can be downloaded free for 30 days.

The Person Pak includes components aimed at organizing names, addresses and other personal information.

It was designed to work with electronic appointment or address books and human resource applications. The Person Pak is slated to cost $229. The Table Pak was designed to store rows and columns in a database file. It is slated to cost $269.

The components are available on the OS/2 platform and are scheduled to be available on Windows by this fall, when the Windows version of OpenDoc is scheduled to be released. — *Sharon Gaudin*

The doctor is in

Gilbert F. Amelio may have been the prescription for National Semiconductor – but will he be able to do the same for Apple?

Before Amelio

- Company lost $320M in four years
- Share price dipped to near-bankruptcy low of $3

During Amelio

- Company had three years of profits totaling $653M
- Share price climbed to a high of more than $30

After Amelio

- Shares fell to $13.50 in July
- Fiscal Q3, ended Feb. 25, and fiscal Q4, ended June 28, were disappointing
- Company laid off 400 workers in May and took a $25 million charge
- Fiscal 1996 income dropped 30% from a year earlier, while revenue grew 10%

Before Amelio

- Company had three consecutive quarterly losses
- $1 billion backlog of orders

During Amelio

- Stock dropped to an all-time low of $16 per share in July
- $740 million loss for fiscal Q2, ended March 29, included restructuring charge
- 2,800 workers to be eliminated by next year
- $32M loss for fiscal Q3, ended June 28
- Unit shipments stabilized over the past two quarters
- Recall and repair of faulty PowerBooks

Amelio: Can his Apple revamp go the distance?

CONTINUED FROM PAGE 1

that hype came directly from the pages of his own book *Profit from Experience*, which detailed how he revived Rockwell's chip business and saved National from near bankruptcy (see chart).

Tim Bajarin, vice president at Creative Strategies Research International, Inc. in San Jose, Calif., gives Amelio high marks thus far.

"Apple's biggest problem is a lack of follow-through and accountability," said Bajarin, who has followed Apple since its inception. "Gil not only quickly realized this but acted on it. He is making Apple workers accountable. Divisions are judged not only on revenues but their overall impact on the entire company. This sounds simple, but it is dramatically different for Apple."

He stopped short

But analysts who follow the semiconductor industry claim that although Amelio restored National Semiconductor to profitability, he failed to position the company for long-term success.

"He didn't finish the job," said Gary Grandbois, an analyst at Dataquest, a consultancy in San Jose. "He left the company in a better position [than when he arrived], but not in as good a position as it could be. The jury is still out on whether the company is structured well enough to grow."

Some observers worry that Amelio will have the same effect on Apple.

"There is no doubt that Amelio has stemmed the financial problems," said Eugene Glazer, an analyst at Dean Witter Reynolds, an investment banking firm in New York. "But whether he can provide corporate customers a compelling reason to purchase the Mac remains to be seen."

Financial turnaround

Game plan

To his credit, what Amelio has done thus far for Apple is to trim the workforce by more than 2,800 employees, sell off two manufacturing facilities, restructure the company into four profit and loss centers, hire a new management team — which includes two former National colleagues — vow to streamline Apple's unwieldy product line and focus the bulk of Apple's effort on the Internet.

Although it was three months before Amelio revealed his turnaround plan at Apple's Worldwide Developer Conference in May, the results of those moves have bought Amelio some time.

The company's recent $32 million loss was minor compared with the staggering $740 million loss the company posted in the previous quarter. Financial analysts had expected Apple to lose upward of $100 million for the quarter. Wall Street hammered Apple's stock to an all-time low of 16 earlier this month, from 49 last July.

But Apple insiders are hopeful that Amelio's thorough, thoughtful and professional management style will be the key to saving Apple. Amelio has been known to personally answer all his electronic-mail messages — time permitting, of course — talk informally with Apple employees of all levels and show up unannounced at meetings and functions just to hear what is happening.

"He really listens to what you have to say," said one Apple manager, who asked not to be named. "He understands aspects of the business that are several levels down. Some CEOs would never bother with the little stuff. He is smart enough to learn from others."

Although avid Macintosh users may long for the old Apple mystique, most said at this point change is necessary.

"Amelio seems to be taking the bull by the horns and doing what is needed," said John Papa, a partner at The Carson Group, a financial consulting firm in New York that has more than 150 Macintoshes. "But ultimately they need to have a ready supply of good, solid, fast machines. The proof is in the products," Papa said.

HP's MPE/IX

CONTINUED FROM PAGE 1

users increasingly uneasy about its continued commitment to the platform [CW, April 22]. Last year the company generated almost $600 million in profit on revenue of $1.2 billion for the 3000 series, according to an estimate by Aberdeen Group, Inc. in Boston.

Awaiting answers

"This has been a question for some time, but it keeps escalating because people are not getting definitive answers from HP that make them breathe a sigh of relief" regarding the future of the platform, said Charles Piercey, executive director of Interex, an HP user group.

Next week's announcement will answer some of the more immediate questions concerning operating system support. MPE/IX 5.5 is the first major upgrade since February 1995, and it includes many of the features that HP 3000 users will immediately find useful.

Features of MPE/IX 5.5

Feature	What it does
Telnet/IX server	• Provides inbound Telnet access • Lowers connectivity costs • Is standardized with Unix servers
[redacted]	
TurboStore/IX	• Allows online backup and device configuration • Easier to add and remove peripherals

Among the new features in Version 5.5 are the following:

- Internet services, including a Telnet/IX server that allows in-bound Telnet access on the HP 3000.
- Built-in support for network printing.
- Support for high-availability Fast and Wide SCSI disk arrays.
- TurboStore/IX support for online backup and device configuration.

Users cheer

"High availability and the network features are the main reasons we are excited about 5.5," said beta user Jenks Crayton, tax systems manager at the Gilford County Tax Department in Greensboro, N.C.

For instance, TurboStore/IX allows users to plug in and configure peripherals without having to take down the system, and the inbound Telnet feature allows better network interoperability with Unix systems, he said.

The built-in support for Fast and Wide disk arrays also is a highly useful feature, said Patrick Krueger, a senior systems specialist at Time Customer Service, Inc. in Tampa, Fla.

"We are virtually a 24-hour shop. Anything that can keep the system up and running as long as possible is definitely welcome," he said.

Also scheduled to be announced at the show are the Model 10 and Model 20 high-availability disk arrays. The company will also announce built-in operating system support for EMC Corp.'s high-end Symmetrix 3000 cached disk arrays for high-end users.

> "People are not getting definitive answers from HP that make them breathe a sigh of relief."
>
> *Charles Piercey, Interex*

MPE/IX 5.5 will ship in August and will be available preloaded and preconfigured on all new HP 3000 systems. MPE/IX 5.5 Power Patch 1, which is required to support the new high-availability disk arrays, will ship in September.

Senior editor Craig Stedman contributed to this story.

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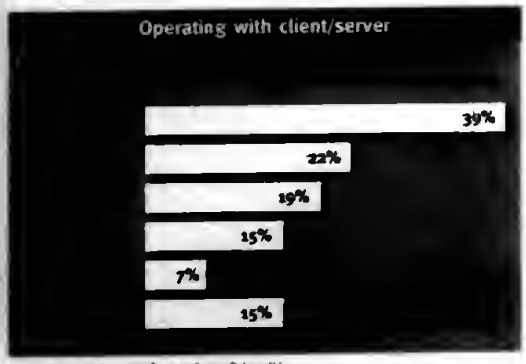


Source: Datapro Information Services Group, Delran, N.J.

Client/server usage on rise

By Julia King

More users are plowing ahead with client/server systems despite the absence of standardized middleware and mainframe-like system management capabilities.

They also distribute data more widely than before and employ a wider array of database and operating systems to do so.

Those are among the key findings of a client/server report released last week by Datapro Information Services Group, Inc., an industry research firm in Delran, N.J.

This year, 46% of information systems managers at 720 companies reported having implemented client/server applications, up from 25% last year, according to the report.

"In 1995, 75% of companies were still undecided about client/server. Now, the undecided are clearly falling on the side to fully implement," said Dennis Byron, a senior client/server analyst and author of the report.

Still, there are client/server holdouts, whose number — 15% — is slightly up from 12% in 1995 and 5% in 1994.

Overall, about 40% of companies' remain undecided about client/server, the survey showed. Immature management tools, higher system administration costs and a lack of client/server expertise topped holdouts' list of concerns, Byron said.

Even where client/server has been implemented, legacy systems continue to thrive. More than 70% of companies with client/server applications continue to access legacy systems.

Almost 20% had incorporated the older systems in new client/server environments.

In the absence of standard middleware technology, many of those companies — about 40% — distribute data by using proprietary middleware from database system vendors or packaged applications providers.

Liberty Travel, Inc., a $1.1 billion travel service company in Ramsey, N.J., is among those companies that held off on client/server deployment until recently. Liberty is building a client/server reservation system based on Compaq Computer Corp. servers and Microsoft Corp.'s BackOffice technology. The system will replace a mainframe system with 8 million lines of Cobol code.

Tools and economics

Compared with three years ago, "the tools are more robust and more stable, and there are more of them. Also, the economics of going client/server vs. mainframe-only are really becoming compelling," said Dick Brightman, Liberty's vice president of information services.

Server technology, in particular, has advanced to a point where "we can now put meaningful client/server functions in on a client/server basis as opposed to just toe-in-the-water kinds of applications," Brightman said.

But not at KFC Corp. in Louisville, Ky. The $1.1 billion fast-food company will stick with its key mainframe-based systems, although it does employ some client/server decision-support applications.

"What we're waiting for is to determine whether [client/server systems] will become the replacement mainstays. And we're not convinced that they will," said Jerry Merritt, KFC's vice president of information technology.

Year 2000, client/server linked

By Thomas Hoffman
NEW YORK

Many of the 1,200 attendees at the SoftEx Accounting & Finance trade show last week shopped for client/server accounting packages that could replace mainframe systems while fixing their year 2000 date problems.

Client/server replacement systems "will kill two birds with one stone," said William Wong, manager of financial systems at Blue Cross/Blue Shield of Connecticut in North Haven.

Blue Cross uses a 17-year-old IBM MVS financial system that lacks a report writer and requires the health insurer to support multiple databases.

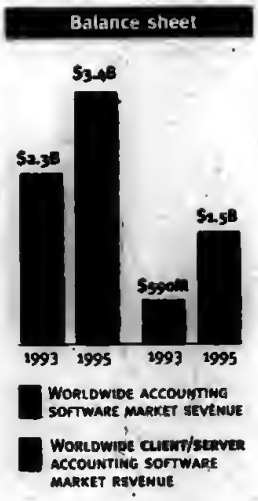
A client/server system should cure those ills and help Blue Cross avoid spending hundreds of thousands of dollars to expand the date fields in its legacy financial system to handle the year 2000, Wong said.

Wong isn't alone. Organizations that delayed replacing their legacy accounting and human resources programs for financial and technical reasons "are making a big push" to buy client/server packages this year to head off expensive year 2000 date-conversion projects, said Jeffrey D. Comport, a research director at Gartner Group, Inc. in Stamford, Conn. (see chart).

Meanwhile, users generally expressed lukewarm interest in the Internet-enabled applications that vendors were hawking here. Instead, they focused on short-term mainframe migration projects.

"We're looking very seriously at the Internet and intranets as a means to extend accounting and financial information to external and internal customers in the future," said Larry Yellin, manager of budgeting and financial reporting at Fuji Photo Film U.S.A., Inc. in Elmsford, N.Y.

But for now, Yellin said, he is more interested in finding a client/server replacement for his company's mainframe-based McCormack & Dodge MSA general ledger system.



Source: International Data Corp., Framingham, Mass.

Pay-as-you-go apps on tap

CONTINUED FROM PAGE 1

dersen Consulting — is offering gas and electric companies a subscription-based customer information and billing application.

"More and more, customers want to renew systems without going through an entire information technology overhaul. They want a service for administrative systems, which aren't core to their business," said Scott Creighton, SHL's managing director of worldwide alliances.

Creighton added that the service promises to speed implementation of new applications by 60% to 65% over in-house development.

What Creighton refers to as SHL's "applications-by-the-drink" service will be part of its parent company's Network MCI offerings. SHL is owned by MCI Communications Corp.

Monthly charge

Initial services will include access to PeopleSoft's human resources applications and Oracle's financial applications. SHL will maintain the application server software and database. Subscribers will pay a monthly connection charge and a fee based on transaction volume, according to Creighton.

SHL also plans to partner with market leader SAP AG and Baan Co., both of which offer a full suite of integrated financial and manufacturing applications.

One possible role for subscription services is integrating the electronic supply chain between companies that use different systems, said Jim Shepherd, vice president of research at Advanced Manufacturing Research, Inc. in Boston.

Application licensing

"Rather than worry about how to pass information from a Baan system to somebody else's SAP system, you could instead enter a purchase order on a public version of that software and pay for it on a per-transaction basis," Shepherd said.

Meanwhile, Utiligent, which was launched in June, has yet to sign up its first customer.

But as industry deregulation takes hold, company officials predict that utilities pressured to come up with new services will opt to rent, rather than build, the new systems needed to support them.

"There's a sense of urgency because of the time it takes to implement and install a customer information system and then to train people and get them proficient on it," said Utiligent President Mike Rusinko.

Last week, several users expressed interest in such a service, which they said could eliminate lengthy system development times and decrease companies' need for IS personnel with hard-to-come-by client/server skills.

Sounds good to users

"I think it's a good idea, and it's definitely a trend that a lot of companies would be interested in taking advantage of," said Mike Benson, director of human resources systems at Nestle USA, Inc. in Glendale, Calif.

"You could reduce dependence on formal applications development and all of the headaches involved in that," he said.

Dennis Hoover, an IS project leader at Baltimore Gas & Electric Co., said Utiligent's network-based customer information and billing service "sounds attractive."

He added, though, that "they would have to build an extreme amount of flexibility into the system because the types of services you can offer relates to the billing system. If it had that flexibility, there would be a lot of attraction."

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Working Together

Intel dials 'net phone standards

By Stewart Deck

Telephone calls over the Internet are one of the 'net's crown jewels. Talk long distance, yet pay only for the local Internet connection.

But incompatible Internet phones have been a problem. So last week, Intel Corp. introduced software for standards-based Internet telephony.

Intel's Internet Phone applet is based on the H.323 industry standard, which lets phone applications communicate with one another. When a sound card, speakers, microphone and software are installed, a phone connection is only a matter of surfing through online white pages.

Previously, the person you called had to have the same vendor's package to make the Internet phone connection, said Mike Heylin, an industry analyst at Creative Strategies Consulting in San Francisco.

"By being standards-based, this is a real breakthrough. It will propel the use of the Internet for phone calls," Heylin said.

One hurdle was the problem of shifting Internet Protocol (IP) addresses. Each time an Internet connection is made, the IP address is different. How can you call someone if his number keeps changing?

Intel's applet incorporates Microsoft Corp.'s User Location Service, which works with Internet white pages directory services to seek out the addresses of Internet-connected and phone-ready users.

Digits do the walking

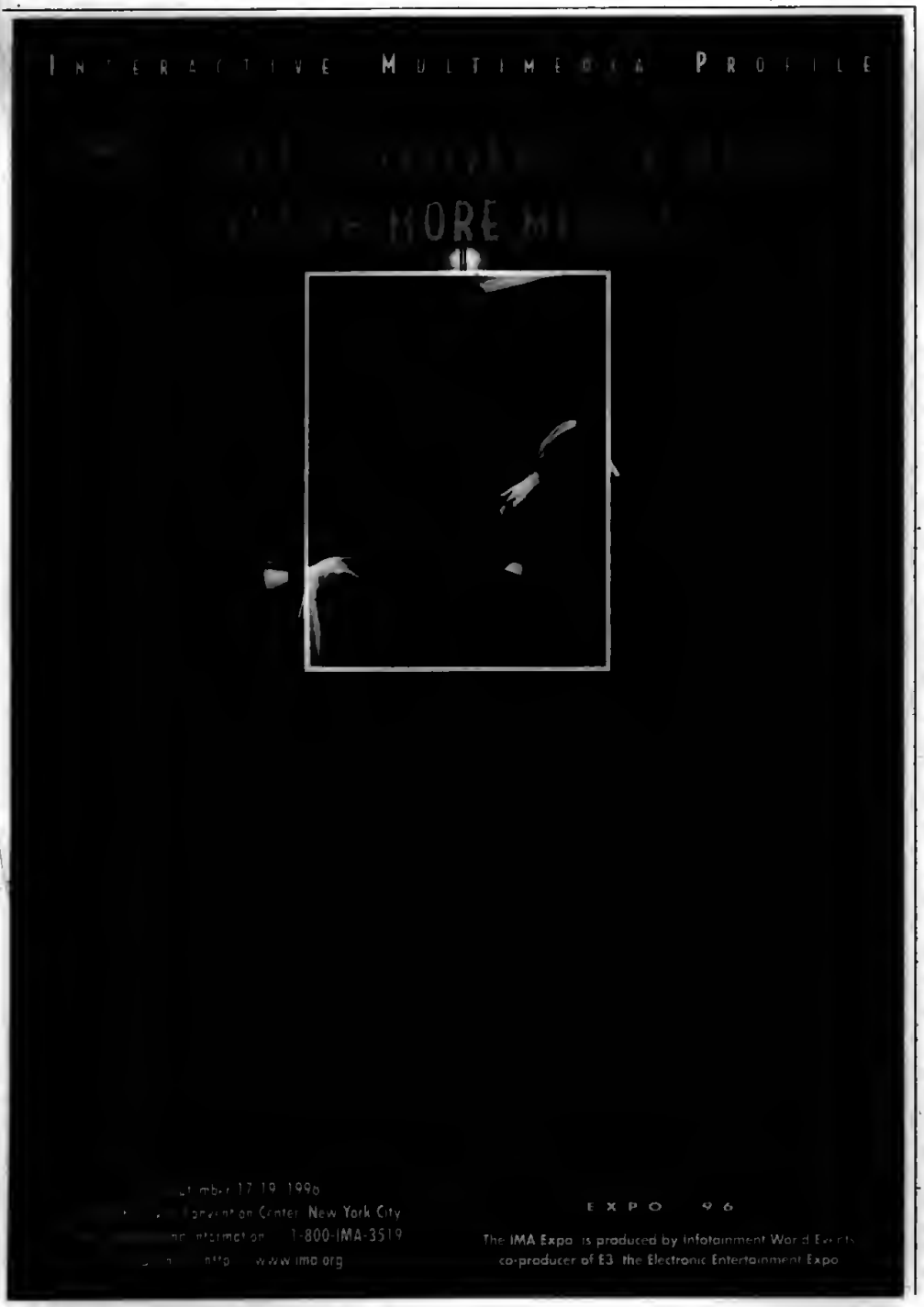
With the IP address pinned down, users can go through white pages directories — including those from WhoWhere, Inc. (www.whowhere.com) and Four11 Corp. (www.Four11.com) — to make the desired phone connection.

The directories have icons next to the names of users with the phone software running and an open Internet connection. The caller clicks on a name, and the call is placed to the receiver's PC.

The Intel applet was designed as an add-on for Netscape Communications Corp.'s Navigator and Microsoft's Internet Explorer. A beta version is available free on Intel's home page (www.intel.com).

By going with standards-based technology, Intel is demonstrating "the leadership that the industry has needed for years," said Jeff Pulver, chairman of the Voice on the Net Coalition in Great Neck, N.Y. "They've become evangelists for technology standards, which is what Internet telephony has needed forever."

Dennis Miniero, executive vice president of Radiant House Europe Ltd., an export business in West Hempstead, N.Y., said he uses Vocaltech, Inc.'s InternetPhone to call corporate offices in Hong Kong and England to cut his phone bills "between $1,000 and $1,200 a month." Though he said he doesn't plan to switch products, he added that standards-based Internet telephony is "a very interesting and sensible" product.



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Wells Fargo nails up private online network

By Mitch Wagner

Wells Fargo & Co., which brought Internet banking to consumers a year ago, last week announced online banking for small businesses. But not for over the public Internet.

For security reasons and to improve response times, the Business Gateway Service runs over a private, dial-up network provided by CompuServe, Inc.

The service targets businesses with fewer than 50 employees and less than $5 million in annual revenue. There is a flat, $14.95 onetime fee for the software. After that, users are charged $5 per month for unlimited transactioos.

Users can check the balances of savings, checking, money market and credit-card accounts and also transfer funds. The owner of the business receives the account — Wells Fargo says most small-business owners handle their own finances — but be can ose the software to grant individual employees access to selected accounts, either on a read-only basis or allowing them to perform transactions.

The service seems to be a hit with Wells Fargo's customers. "It's been great. It makes banking easy," said Yvonne McCallister, office manager at HTI Architects, a 12-person firm in San Francisco. "It's much better than getting on the phone and talking to someone or going to the bank to use an ATM, which were the other options."

Julio Gomez Jr., an analyst at Forrester Research, Inc. in Cambridge, Mass., said he expects the service — one of the first in the country — will help Wells Fargo get customers nationwide; the bank is currently focused on the West Coast.

Business Gateway Service *uses Internet standards but has its own closed network*

Although the connection uses Internet protocols and the front end is an Internet browser, the network itself is closed. This was done to allay fears of Wells Fargo's customers about Internet security.

CompuServe's consumer service runs on the public Internet to reach the broadest band of consumers. To enhance security, the consumer service requires versions of Netscape Communications Corp.'s Navigator browser or Microsoft Corp.'s Explorer browser, which support strong encryption protocols.

And while the consumer service was built in-house, software for the Business Gateway service was outsourced to Sapient Corp. in Cambridge, Mass.

Data gets communicated from CompuServe's Columbus, Ohio, facilities, to the Wells Fargo data center in Roseville, Calif., over two "fractional T1" lines — data connections that use part of a T1 line.

Online banking is by no means unique to Wells Fargo. Several online banks offer account access information on the Internet, and more than 20 banks provide banking access through proprietary online services.

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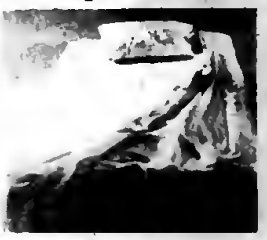

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Chasing deadbeats online

Direct deposit of late child-support payments highlights growing trend toward electronic transactions

By Mindy Blodgett
and Sharon Gaudin

Watch out deadbeat parents. A new service is making it easier to deduct child-support payments from employee paychecks and send the funds to state agencies.

Electronic transfer of child-support payments is the latest development in a growing nationwide trend toward online government transactions, including online tax filing [CW, July 15] and electronic delivery of welfare benefits.

Now, companies such as Coors Brewing Co. in Golden, Colo., are considering a new client application that allows direct transfer of child-support payments to the state agencies responsible for getting benefits to recipients.

The Child Support Solution service combines software from Bottomline Technologies, Inc. in Portsmouth, N.H., with a transaction-processing network from Lockheed Martin Missile and Space's Information Management Services unit in Teaneck, N.J.

The service will be available commercially later this year. It is expected to cost states about 28 cents per transaction.

Client software will be distributed free to participating employers in the state. For example, Brad Fox, manager of payroll at Coors, is considering participating in a Colorado pilot program.

Lockheed is offering the software free to states with which it already has electronic payment contracts. Participating states are expected to offer the software to in-state companies with more than 10 employees. Colorado started using the software last month and Arkansas began this month. Hawaii and Los Angeles County are expected to try it in the next few months.

Fast payment

The vendors said the software and services can transfer child-support payments from the employer to the state and then to the custodial parent's personal bank account in less than 72 hours.

"The ability to utilize wire transfer for child support would give us much quicker turnaround time for the recipients and is less hassle and time for us," Fox said. He said Coors must handle 250 garnishments from a pool of 6,000 employees on a biweekly basis.

Source: U.S. Department of Health and Human Services

Industry observers said the need for quick and easy garnishments is real. Lockheed officials said that each month, New York handles 450,000 garnishments and Los Angeles County handles 120,000.

Federal law requires that states automate their systems for collecting overdue child-support payments next year.

Don Mares, auditor for the city of Denver, is testing the software to process 800 to 1,000 garnishments monthly. "It makes the process easier and faster," Mares said. "Before, the system was much more manual. Now, we can free up the staff for other things."

Although electronic transfers can save money, Ezra Gottheil, an analyst at Hurwitz Group, Inc. in Newton, Mass., warned of the possible dangers of attaching any software to a corporate payroll system. Processing paychecks is one of the most sensitive operations in a firm, so users must be sure the add-on won't create more problems than it solves, he said.

Electronic child-support payment is new, but states have been moving toward paperless welfare benefits for years. Electronic benefits transfer (EBT) systems are seen as a way to cut distribution costs and battle fraud, while sending welfare payments and food stamps to needy recipients.

After languishing in the pilot stage for a while, 34 states have EBT programs, and more are rushing to meet a 1999 federal deadline. "The EBT movement has grown tremendously in the past year and is accelerating," said Milford Sprecher, an analyst who follows state government technology at Federal Sources, Inc. in McLean, Va.

With EBT, welfare benefits are deposited electronically into EBT accounts. Recipients use debit cards to withdraw benefits from kiosks or, in the case of food stamps, from point-of-sale terminals at grocery stores.

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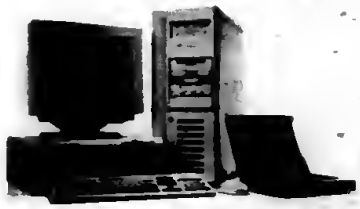

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Computer Industry

Market share rules

Dominant players continue to pile up profits; legacy vendors struggle

By Craig Stedman

Second-quarter achievers: Microsoft Corp., Compaq Computer Corp., Intel Corp., Sun Microsystems, Inc.

Second-quarter laggards: IBM, Digital Equipment Corp., Unisys Corp., Stratus Computer, Inc.

What? You're surprised?

"Basically, the strong get stronger, and the weak get weaker," said Michael Geran, a financial analyst at Donaldson Lufkin & Jenrette Securities Corp.'s Pershing Division in Jersey City, N.J. "If you're at the wrong end of the product spectrum, you're facing limited prosperity."

That was proved in spades in the quarter that ended June 30, as cutting-edge companies such as Microsoft, Compaq, Intel and Sun turned in strong showings. Older-line vendors such as IBM and Digital have reported less-than-stellar results or have warned that bad news is on the way.

There are exceptions to the rule. Hewlett-Packard Co., normally one of the highest of highfliers, has said revenue will be lower than planned in its fiscal quarter that concludes this month. Meanwhile, embattled Apple Computer, Inc. managed a much smaller than expected loss in the second quarter.

Second-quarter 1996 earnings

Company	Revenue April through June	Percentage change from 1995	Profit/Loss April through June	Percentage change from 1995
Compaq	$592M	10%	$27M	13%
[illegible]	$4B	14%	$267M	9%
IBM	$18.188	4%	$1.35B	-22%
[illegible]	$2.25B	39%	$559M	52%
Netcom	$28M	167%	-$11.4M	-293%
[illegible]	$101M	98%	$12M	97%
Stratus	$140M	0%	$4.5M	-26%
[illegible]	$2.51B	-0.7%	$5.3M	-87%

But, for the most part, it has been "the usual mix" of do-gooders and ne'er-do-wells, said Jay Stevens, an analyst at Dean Witter Reynolds, Inc. in New York. Companies that depend heavily on European business, particularly IBM and Digital, were hurt by weak sales there, Stevens added.

After two strong years, IBM has been stubbing its toes again in 1996. Its second-quarter earnings tumbled 22%, and revenue growth was limited to 4%. The computer giant had warned that the results would be weak, "and we delivered what we said we would," said Richard Thoman, IBM's chief financial officer.

Falling prices led to lower revenue from mainframes, storage products and memory chips. Mainframe software sales dropped as well, and IBM was hit hard by negative currency translations. But Thoman said he expects the second half of the year to be "more positive."

Revenue rise

Some vendors relied on revenue growth to drive earnings. For example, Microsoft's revenue rose 39%, and Sun, which reported its results two weeks ago, had a 22% sales increase in the quarter.

Others, including Compaq and Intel, boosted the bottom line primarily through increased margins, said William Milton Jr., an analyst at Brown Brothers Harriman & Co. in New York.

Compaq's 14% revenue increase was "relatively disappointing compared to expectations and to what we've seen in previous quarters," Milton said. But a shift in shipments toward higher-margin servers propped up Compaq enough to make it one of the few positive surprises in second-quarter earnings, he added.

Cheyenne hits comeback trail

Deals strengthen software firm after McAfee's failed takeover attempt

June

April 13, 1996
McAfee offers to buy Cheyenne for $1B following a report of a weak third quarter.

April 15
McAfee's offer causes Cheyenne's stock to rise to $23 for the first time since March 28.

April 18
Cheyenne sues McAfee, alleging unfair business practice.

April 23
Cheyenne posts lower-than-expected earnings.

May 2
McAfee withdraws its offer. Cheyenne's stock falls 17%, to $19.75.

July 11
Cheyenne buys Intelligence Quotient International.

July 15
Cheyenne buys Mediatrends.

By Juan Carlos Perez

A few months ago, Cheyenne Software, Inc. was waging a fight to stabilize its erratic revenue stream and fend off an aggresive takeover attempt by McAfee Associates, Inc.

Today, Cheyenne, a maker of network backup and storage software, is digging out of the hole it was in.

The Roslyn Heights, N.Y., firm expects to close the current quarter with sales of $49 million, up from $41 million recorded for the same quarter a year earlier. And net income will be in the range of 21 to 24 cents per share, also an increase from last year's fourth quarter.

This follows a month in which it bought two companies, inked partnerships with Computer Associates International, Inc. and Hewlett-Packard Co. and released the much-awaited Windows NT version of its flagship product ARCserve.

"Cheyenne has come back with a vengeance. It's been doing a lot of things right over the last few months," said Jack Gold, an analyst at Meta Group, Inc.'s Boston office. "The company is in a good position to grow, has cash in the bank and management got its act together."

Takeover turned ugly

Cheyenne became a takeover target in April after the company announced that its earnings would fall below Wall Street expectations. But McAfee's takeover attempt turned into a messy, three-week, public brawl that ended with McAfee backing out after Cheyenne sued, alleging unfair business practices.

At the time, some observers termed Cheyenne's resistance a mistake, arguing that the company should have given in before it lost its attractiveness for buyers. But word about Cheyenne is more positive these days.

"I think Cheyenne is getting out of [its] slump," said Joe Barkan, an analyst at Gartner Group, Inc. in Stamford, Conn.

The company has done well to improve its family of antivirus software and to diversify beyond its core network storage and management business into communications, Barkan said. To this end, Cheyenne this month bought Mediatrends, Inc., a maker of computer telephony software.

Cheyenne's travails came from its heavy emphasis on one product: its network backup software ARCserve for Novell, Inc.'s NetWare, Barkan said. But two months ago, Cheyenne finally began shipping the Windows NT version of ARCserve 6, which has been well-received in the market, he said.

Now that it's finally a player on the NT field, "Cheyenne needs to be very aggressive on the NT front," said Paul Mason, an analyst at International Data Corp. in Framingham, Mass. "Although one quarter doesn't make a trend, I do see evidence that Cheyenne is more focused and understands what it needs to do to be competitive."

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- Integrated 16-bit Sound with Stereo Speakers
- 128-bit High Performance Video Controller
- Infrared Port
- 3 Year Limited Warranty

$3119
Product Code #600403

DELL OPTIPLEX® GXpro 200
200MHz PENTIUM PRO PROCESSOR
- 32MB EDO ECC DIMM RAM
- 2GB Fast SCSI Hard Drive
- 256KB Internal L2 Cache
- 17LS Monitor (15.7" v.i.s., .28NI)
- #9 Imagine II PCI Video Card with 4MB Video Memory
- 8X EIDE CD-ROM
- Integrated Vibra 16 Audio
- Integrated 3Com® PCI EtherLink® III
- Windows NT® with 1 Year Support
- NEW Tool-less Convertible Desktop/Mini Tower Chassis
- 3 Year Warranty[1]

$4079
Product Code #300182

DELL OPTIPLEX GXpro 180
180MHz PENTIUM PRO PROCESSOR
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- 2GB EIDE Hard Drive
- 256KB Internal L2 Cache
- 15TX Trinitron Monitor (13.7" v.i.s., .28NI)
- S3 Trio V+ PCI Video Card with 2MB Video Memory
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PICTURED SYSTEM

$3199
Product Code #300896

DELL OPTIPLEX GX 5133MT
133MHz PENTIUM PROCESSOR
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- 2MB Video Memory
- Integrated Vibra 16 Audio
- Integrated 3Com EtherLink III
- MS® Office Professional with Bookshelf
- 8X EIDE CD-ROM
- DMI Compliant
- 3 Year Warranty

$2472
Product Code #300218

DELL OPTIPLEX G 5133L+
133MHz PENTIUM PROCESSOR
- 16MB EDO RAM
- 1GB EIDE Hard Drive
- 15LS Monitor (13.7" v.i.s., .28NI)
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- Low Profile Chassis
- DMI Compliant
- 3 Year Warranty

$1768
Product Code #300185

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(Expandable to Quad Processor)
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- 512KB Write Back Cache
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- Mylex RAID Controller
- 8X SCSI CD-ROM
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- On-site[‡] setup and Validation
- 3 Year BusinessCare™ Warranty[‡]
- 1 Year DirectLine™ NOS Support

$17,735
Product Code #200127

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(Expandable to Dual Processor)
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- Three 2GB SCSI HDD
- 512KB Write Back Cache
- 3Com 10/100 Ethernet Adapter
- DSA RAID Controller
- 6X CD-ROM
- 15LS Monitor (13.7" v.i.s., .28NI)
- SafeSite Server Management Software
- 3 Year BusinessCare Warranty

PICTURED SYSTEM

$11,263
Product Code #200129

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3Com Network

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Editorial

Back to basics

With the market for high-tech stocks whirling like a wind chime in a hurricane the past few weeks, some people wonder if the computer industry is in for trouble. Quite the opposite is true.

In fact, the nearly 20% decline in computer stocks over the past three weeks indicates that sanity is finally taking hold.

Of course, sanity is still a rare commodity in this market. Sun Microsystems, for example, beat Wall Street estimates two weeks ago and was rewarded by having its stock knocked back 13% in a week. This is the same market, mind you, that permitted CyberCash, Inc. earlier this spring to touch $400 million in market capitalization on first-quarter revenue of less than $22,000.

You may have noticed that *Computerworld* has devoted little space to this phenomenon. You can expect that to continue because the stock market has less and less relevance to the buying decisions of IS managers.

Investors buy promise. IS buys products. The phenomenal stock valuations of the past year were driven by the potential of big payoffs that had little to do with business fundamentals. In fact, the bull market diverted many companies from their core competencies as they raced to tack "Internet" on to their mission statements in order to take advantage of the market's runup.

July's "correction" may actually be a blessing in disguise for IS managers — except those who bought Netscape at 85, I guess. Price routs have a way of focusing investors back on businesses whose products and strategies have staying power. Hopefully, senior corporate management's attention will now turn to vendors and technologies that deliver good fundamental value and away from those whose accomplishments have been limited to getting on the cover of some business magazine.

* * *

In a column on IBM and Digital two weeks ago, I implied that IBM had the same problems selling its PowerPC chip that Digital had selling its Alpha microprocessor. Some Apple enthusiasts quickly pointed out that sales of several million PowerPC-based Macintoshes ain't exactly chopped liver. And they're right. I was thinking more of the high-end server market, but I should have said so.

Paul Gillin, *editor*
Internet: *paul_gillin@cw.com*
www.ultranet.com/~pgillin

Letters to the editor

Netscape vs. Explorer: Readers take sides

Garrett N. Ray seems to have his facts wrong in his article comparing Microsoft and Netscape browsers ["Netscape vs. Explorer," CW, June 24]. He says Navigator 3.0 is faster than Internet Explorer 3.0.

I found Internet Explorer 3.0 to be faster than Navigator 3.0. Also, the Java applets run faster — even if an applet is in its own window, which is annoying — in Explorer 3.0 than in Navigator 3.0. And I would rate Explorer 3.0 higher for usability.

Ray also claims Netscape is more "open" than Microsoft. If you consider shoving inferior Secure Sockets Layer over Secure Hypertext Transport Protocol down everybody's throat, developing a ooo-cross-platform deployment architecture called plug-ins, and developing nonstandard Hypertext Markup Language tags while bypassing the standards committee to be open — then, yes, Netscape indeed is open!

By the way — no, I don't work for Microsoft.

Sundar Krishnamurthy
Fremont, Calif.

Garrett Ray's review was a very good analysis of the competing products. But he left it wide open [by concluding that] "it is difficult to choose one over the other based on any plausible feature or enhancement."

Only a month ago, the obvious choice was Navigator. Now Microsoft has won. About 10% of the battle is features, and the other 90% is old-fashioned business — whoever has the most money at the end wins.

At a moment's notice, Microsoft can create an individual product team larger than all its competitors' staffs combined.

You can't outcode Microsoft for long. Netscape has two basic product lines: Web browsers and Web servers. And Netscape's stock is severely overvalued on the promise that its 32 million users will pay their $40 each. It's not gonna happen.

These products are commodities. The goal is to be stable, dull and standardized. The glitz is in the content, not the browser. Netscape has done quite well. It is competing equally, if not better, on everything but price. And that is why it will lose.

Microsoft makes both products, too. It doesn't charge for its browser, and it never has to — at least not until its competition is gone. There's plenty of extra cash lying around to make up the difference. It can play the price game like no one else.

With this release of Explorer, Microsoft has stopped Netscape in its tracks. Netscape will not even be in the news in 12 months. [It is] destined to be a niche player creating browsers for Macintosh and Unix — who cares?

Scott Marean
Oakbrook Terrace, Ill.
smarean@dcsys.com

Gasp! We've restored Chicago to its place on Lake Michigan.

Westward ho!

About your map for the "Empty packets" article [CW, June 24]: Hey, who moved Chicago to the border of Indiana and Ohio? Nobody asked me! Does that mean my taxes will get lower or higher? What about my salary and my cost of living? Doesn't matter — I refuse to give up my lake view. I guess I'll keep subscribing anyway.

Kevin J. Harnett
Chicago
KJH130@msn.com

Parody meets reality

You know, I'd actually be laughing out loud at Michael Cohn's "Helpful hints for scrubbing cyberspace" [CW, July 1] except for the fact that these are the exact types of idiotic suggestions that people seriously make. It's pretty sad when so many of the suggestions made about getting rid of Internet-based pornography are just as funny as the parody.

Pete Tuscano
Herndon, Va.

■ Computerworld welcomes comments from its readers. Letters should not exceed 200 words and should be addressed to Paul Gillin, Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.

James Martin

Life, liberty and the pursuit of a home page

Thomas Jefferson's wonderful home, Monticello, was recently the inspirational setting for a series of discussions among computer industry pioneers. The format of the *Computerworld*/Smithsonian Monticello Lectures was modeled on the meetings Jefferson held to debate the revolutionary issues of his time. I was asked to be moderator — in effect, pretending to play Jefferson.

Thomas Jefferson would have been a webmaster on the electronic frontier.

As we sat at Jefferson's table, surrounded by the seemingly close ghosts of his era, I naturally entertained thoughts about how Jefferson would view today's electronic frontier if he were alive. I'm convinced he would have embraced it enthusiastically.

He would have been proud that Monticello has a charming home page on the World Wide Web (www.monticello.org). He would have been very pleased that the Library of Congress named its legislative Web site Thomas (thomas.loc.gov), in honor of the man who provided the library's core collection.

More important, the Thomas Web site is a prime example of the power of the Internet to achieve Jeffersonian goals. Citizens with Web access — not just fat-cat lobbyists — can download the actual language of bills in the U.S. Congress and monitor the legislative process.

I'm guessing that Jefferson would have been pleased by the libertarian bent of the Internet community and the recent court decision that struck down an effort to ban "indecent" speech in cyberspace. As the federal court in Philadelphia concluded, "Just as the strength of the Internet is chaos; so the strength of our liberty depends upon the chaos and cacophony of the unfettered speech the First Amendment protects."

In essence, the Internet allows citizens to become pamphleteers and rabble-rousers. "A little rebellion now and then is a good thing," Jefferson liked to say, because it sweeps away the cobwebs of Old World thinking.

Dennis Wheeler

Like Jefferson, we stand at the threshold of a new world. We have an awesome opportunity to give it whatever characteristics we decide. For starters, we must protect the founding principles of the Internet — free and open exchange of information — from excessive government regulation and monopolistic corporations.

Just as Jefferson and the other Founding Fathers debated the future of America, so must we debate the future of cyberspace. For example, how do we provide universal access to the 'net so that we avoid a bifurcated world of information haves and have-nots? And how do we pay for that?

There are deep and dangerous issues to consider, including privacy abuses, fraud and the borderless nature of cyberspace. As Jefferson put it: "We have the wolf by the ears; and we can neither hold him, nor safely let him go."

It is up to us, the builders of this new world, to ensure that cyberspace brings democratic principles to the global melting pot. Maybe we can even improve on Jefferson's conviction that "all men are created equal" and this time, make sure that includes women, people of color, foreigners — even the British.

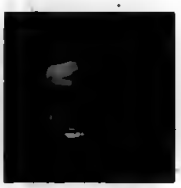
Martin, founder of James Martin & Co. in Fairfax, Va., is a writer, lecturer and consultant on information technology. His next book, *Cybercorp*, will be released in October.

Michael Schrage

Intranet ads: Coming to a PC near you

Venture capitalist John Doerr at Kleiner, Perkins — perhaps you've heard of his clients Lotus, Sun Microsystems, America Online and Netscape? — has a decidedly provocative take on the future of Internet advertising.

He says he believes the most explosive growth in virtual advertising will occur on intranets.



Bandwidth-hogging intranet advertising will be as common as the spreadsheet.

Because Doerr is a guy who literally puts his money where his mouth is — and outperforms the S&P 500 while doing it — I tend to take his prognostications seriously. The formats and genres for this nascent generation of intranet programming are already evolving. You could make a case that a manager firing up her Yahoo search engine to do some market research offers a perfect example of an intranet advertising target: She's seeing those commercially sponsored banners as she browses the 'net on company time.

> Are businesses ready for commercial infiltration of their intranets?

Is that the emerging future of business-to-business advertising? Are our LANs and WANs becoming the cable TV and billboards of the corporate world?

Yes. Take a look at Copertino, Calif.-based PointCast, which offers a commercially sponsored Internet/intranet news service and claims a quarter of a million new "viewers" a month. It may be a victim of its own advertising success. Several clients have complained that PointCast gobbles too much network bandwidth (PointCast has promised upgrades that halve the bandwidth burden). What's more, these clients try to restrict the casual use of the service, which runs as a screen saver during PC downtime. For all intents and purposes, PointCast offers a perfect prototype of ad-supported intranets.

Theoretically, of course, it's tough to figure out the practical difference between browsing an ad-sponsored Web page on your desktop and, say, reading *The Wall Street Journal* or — dare I mention it? — *Computerworld* at your desk. As more and more business publications assume Web-based incarnations, it seems inevitable that business-to-business advertising will be a staple of the corporate medium.

Companies will have to decide whether their employees are becoming better-informed and more productive with an ad-supported intranet or whether commercial infiltration represents a deleterious distraction.

It doesn't require great imagination to see how clever suppliers can hot-link their best customers to special promotions and "Webfotainment" that attracts repeat visits and new business. Just as intranets can blur the line between information and interaction, they will make it increasingly difficult to distinguish between advertising and vital data.

The growing commercialism of the Internet and intranets invariably intersects at new opportunities. Former Lotus chief Jim Manzi, who now runs Nets, Inc., doesn't foresee banner-driven intranet ads, but he anticipates a blurring between electronic commerce and virtual advertising. The more transactions that occur on intranets, the more likely it is that people will see some kind of ads on their screens. You think Java will only download apps?

IS folks are doomed — excuse me, destined — to manage yet another tension: How do they codesign the commercialism of their own intranets even as they build filters, screens and agents to minimize the potential time-wasting aspects of intranet ads in-house?

Like it or not, intranet advertisements — in whatever form — will be as common as spreadsheets on the screens of gold-collar knowledge workers. The intranet ads may be blunt; they may be subtle. Either way, their presence will have to be monitored and managed. But, hey, there's no business like show business.

Schrage is a research associate at the MIT Media Lab and author of *No More Teams!* His Internet address is schrage@media.mit.edu.

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PRODUCT REVIEW

Big problem doesn't KO Cyrix PC, 43

Servers PCs

Data General ships Pentium Pro servers

By Jaikumar Vijayan

Data General Corp. hopes to ride Pentium Pro technology deeper into the enterprise with two powerful high-end servers based on the chip.

Its newest Aviion servers are among the first Pentium Pro servers of their class to ship.

DG's AV 4900 office and AV 5900 rack-mounted servers support up to four 166- or 200-MHz Pentium Pro chips and come equipped with a 512K-byte cache and up to 4G bytes of main memory. The systems support DG Unix, SCO, Inc.'s Unixware System and Microsoft Corp.'s Windows NT Server operating systems. Pricing starts at around $35,000 for a quadprocessor system based on the 166-MHz Pentium Pro chip and at around $40,000 for a 200-MHz system.

"This is a pretty strong offering from DG," said Greg Garry, an industry analyst at Dataquest in San Jose, Calif.

Data General's Aviion AV 4900 and AV 5900

- Based on 166- and 200-MHz Pentium Pro
- Support up to four processors
- Come with 512K-byte cache and up to 4G bytes of memory
- Feature automated recovery from CPU, memory and disk channel failures
- Pricing starts at $34,995 for the 166-MHz Aviion 5900

Standout in crowd

Setting the systems apart from the crowd are a number of features, including "some of the redundancy features, the expertise they have with [high-end] storage and DG's clustering technology," Garry said.

For instance, DG's systems come with fully redundant power and cooling and automated recovery from CPU, memory and disk failures.

DG's new Aviion systems are expected to be a lot more scalable than some of the current Pentium Pro-based Windows NT Standard High Volume (SHV) servers, said James Garden, an analyst at Technology Business Research, Inc. in Hampton, N.H.

For instance, the AV 4900 and AV 5900 servers can be combined with DG's fault-tolerant Clariion disk arrays to access more than 5T bytes of storage. Also, up to eight Aviion servers can be clustered for increased availability and power.

"The systems may be slightly higher-priced [compared with standard Pentium Pro-based Windows NT servers], but they have higher availability and are a lot more scalable," Garden said.

The servers are at the forefront of a movement among several vendors to leverage Intel Corp.'s SHV motherboard technology in the enterprise.

SHV motherboards are part of Intel's efforts to widen acceptance of the Pentium Pro by seeding the market with highly standardized building blocks, around which PC vendors can build servers and workstations.

That strategy is expected to dramatically open the PC server market — now dominated by a handful of vendors such as Compaq Computer Corp., Hewlett-Packard Co. and IBM — to several second- and third-tier vendors.

Analysts expect that DG — a fairly recent convert to Intel technology from Motorola Corp.'s 88000 chip — will initially focus on traditional mid-range Unix markets with its new Aviion servers.

Hot hybrids

Unix parallel processors mutate as they take on commercial applications

By Craig Stedman

Some customers are starting to use Unix parallel processors in live business applications that move the machines beyond their original decision-support niche.

But a funny thing is happening on the way to the land of transaction processing: Parallel systems are mutating into hybrids that mix parallel capabilities with more run-of-the-mill symmetrical multiprocessing (SMP).

IBM last week became the latest vendor to support the use of SMP servers as compute

Parallel processors, *page 43*

Worldwide high-performance computing revenue from commercial and technical markets is heading in different directions

Source: Smaby Group, Inc., Minneapolis

Notebook users heeded

By Mindy Blodgett

Notebook users seeking longer battery life and better mobile management and support should see products with some of those features by year's end, industry watchers said.

Vendors are expected to follow the lead of Compaq Computer Corp., which recently built its Intelligent Manageability features — including asset, security and fault management — in to its Armada notebook line.

Prices will continue to drop this summer as vendors release laptops with faster processors, including Intel Corp.'s 133-MHz chip — the most powerful on the market. Intel is expected to release a 150-MHz chip later this summer, and most vendors are expected to support it.

But many users said that high on their wish lists are features such as longer battery life, reliability and increased memory and storage — not faster processors.

"I don't know anyone who owns a laptop who isn't concerned about battery life," said Asmar Maydun, staff manager of mobile computing support at the AT&T Corp. corporate calling-card sales facility in Warren, N.J. "And I am no longer that impressed with speed. For many users, the 90-MHz and 100-MHz laptop speeds are just fine, and they don't necessarily need the CD-ROMs."

Versa 4200 notebooks

- Processor: 100- or 133-MHz Pentium
- Screen: Active-matrix thin film transistor
- Hard drive: Up to 2.8G bytes
- Battery: Lithium ion with 3 to 6 hours of life

Vendors may be listening. Dale Fuller, vice president and general manager of portable computer systems at NEC Technologies, Inc. in Mountain View, Calif., said his company plans to release products with as much as 10 to 12 hours of battery life in the next year or so.

Andrew Seybold, editor of the "Outlook on Communications and Comput-

Notebooks, *page 43*

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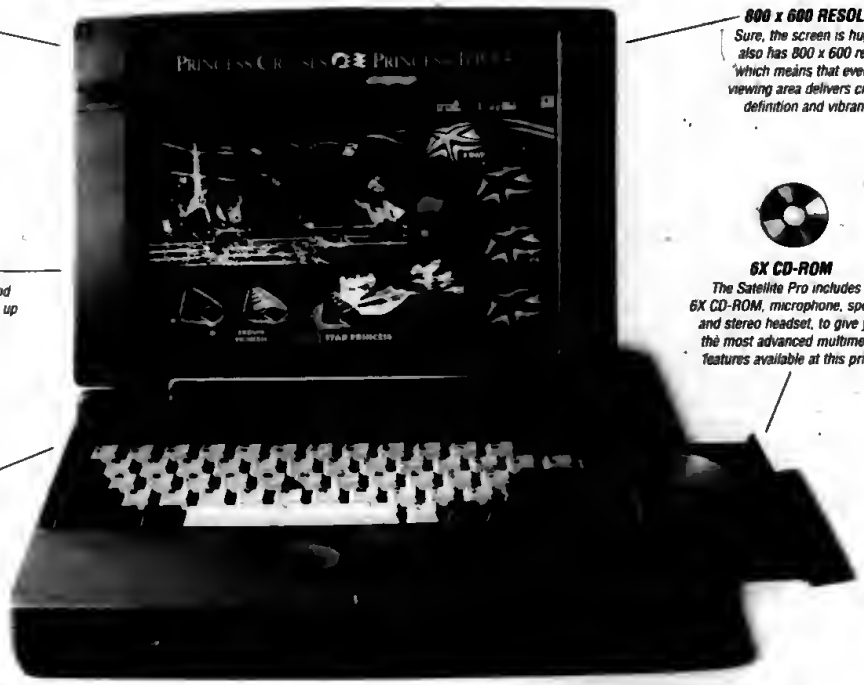

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Notebooks

CONTINUED FROM PAGE 41

ing" newsletter in Boulder Creek, Calif., said vendors "are too hung up on things like CD-ROMs and speed. A lot of users just want easy-to-use machines with good connections back to the office."

Following are some recent notebook announcements:

Hardware upgrades

▪ NEC upgraded two of its lines. The Versa 4200 high-end notebooks now have 100- and 133-MHz processors, up to 2.88G bytes of hard drive storage and active-matrix screens for between $2,999 and $3,899. The Versa 2400 series now sports 11.3-in. screens and 100- and 133-MHz processors for prices starting at $2,299.

• **Hewlett-Packard Co.** in Palo Alto, Calif., dropped prices of its HP OmniBook 5500 notebook line from the $4,140 to $6,600 range to between $3,435 and $6,150.

▪ **Digital Equipment Corp.** in Maynard, Mass., upgraded its low-end HiNote VP line with 11.3-in. screens and 120-MHz processors and its high-end HiNote Ultra II line with 11.3-in. screens and up to 56M bytes of memory.

Big problem doesn't KO Cyrix PC

By James Connolly and Tom Lamoureux

PRODUCT REVIEW

Overall grade: C+

Like a victim in an Alfred Hitchcock flick, the Cyrix machine screamed, and then it died.

When we got our hands on the Cyrix 6x86-P166 this spring, our eyes lit up. It had an official speed of 133 MHz but ran like a 166-MHz system. It screamed through each application we put on it.

The sad part was that, like a victim in an Alfred Hitchcock film, it screamed and then died.

Chip maker Cyrix Corp. in Richardson, Texas, moved into the systems business in April with two PC models based on its 6x86 chip, a rival to Intel Corp.'s Pentium chip.

In informal tests by members of the editorial staff at *Computerworld*, the P166 was blindingly fast when running several multimedia packages, including video, and the core applications of Microsoft Corp.'s Office and Lotus Development Corp.'s SmartSuite.

But problems surfaced immediately after the system arrived and recurred somewhere between 10 minutes and an hour after each boot-up. The most noticeable problems included a broad range of error messages generated by Windows 95 while running any of several applications. In some cases, the applications crashed. In other cases, a full reboot was needed. The most subtle problems included a sudden loss of sound. The most extreme problem was the machine's tendency to reboot itself.

Working our way through the entire system — replacing one part after another with the advice of Cyrix support staff — finally led us to a faulty power supply. Once we dealt with that problem by running the machine on an uninterruptible power supply, the system lived up to its promise. Cyrix officials said our problem was an isolated one and hadn't occurred in other Cyrix machines. Conversations with other users seemed to confirm that.

Having finally dealt with the stability problems, we ran a new comparison, this time against a 133-MHz Pentium-based machine.

Again, the results were impressive. They included the following tests:

▪ Using WinZip 32, we compressed a 60M-byte MapInfo Corp. data set to a 25M-byte zipped file. Timed at 13 minutes, 17 seconds on the Cyrix vs. 21 minutes, 1 second on the Pentium-based machine.

▪ In Notes, we requested a database and built a Date view. This was timed at 55 seconds on the Cyrix vs. 1 minute, 23 seconds on the Pentium-based machine.

• In Notes, we requested a database and built Assignments by assigned view. This was timed at 38 seconds on the Cyrix vs. 1 minute, 1 second on the Pentium-based machine.

Connolly is technical evaluations editor; Lamoureux is an IS staff member at *Computerworld*.

Parallel processors mutate to hybrids

CONTINUED FROM PAGE 41

oodes in a parallel system. The computer giant tied new PowerPC 604-based RS/6000s to its RS/6000 SP parallel machine. Other companies such as NCR Corp. and Pyramid Technology Corp. earlier combined the two technologies.

Parallel systems break up applications to run across multiple processors and typically require custom development with parallel databases. By comparison, SMP boxes run multiple jobs simultaneously on different processors, which reduces programming complexity and opens them op to packaged applications.

Cluster-like

The emerging hybrids function more like clusters that can run applications on individual nodes and then use the parallel system's high-speed interconnect to exchange data or replace failed processors. "It's a cluster-in-a-box approach that should have much more viable commercial appeal than truly parallel processing does," said Rich Partridge, an analyst at D. H. Brown Associates, Inc. in Port Chester, N.Y.

Tiger Management LLC, an investment firm in New York, has been moving more and more of its workload to an RS/6000 SP. Installed in early 1995, the SP initially was limited to decision support, but now almost all of Tiger's transaction processing is done on the machine, said David Audley, director of investment systems and services at the company.

"This is our mainframe," Audley said. Earlier parallel systems "were not the kind of systems that you wanted to bet a company on. It was almost a question of what failure mode you were in on a particular week." But Tiger has only had one brief outage of one node since it fired up the RS/6000 SP, he said.

Tiger wanted to meld separate departmental applications into one enterprise machine, while keeping the ability to fence off live applications from decision support and development. Parallel technology fits those needs like a glove, Audley said. Even so, Tiger postponed a planned upgrade of its six-node RS/6000 SP to wait for the SMP support, which should open the door to many more off-the-shelf applications.

ShopKo Stores, Inc., a mass-merchandise retail chain in Green Bay, Wis., is also expanding its use of an RS/6000 SP beyond data warehousing. In June, ShopKo started to move its core retail applications from a mainframe to its 35-node SP, which runs Oracle Corp.'s database.

"We're taking everything off of character-based DB2 and reimplementing it in client/server mode" on the RS/6000 SP, said Jim Anderson, director of store systems at ShopKo. A full SP rollout of the retail applications, including inventory management and merchandise purchasing, is scheduled for early next year, Anderson said.

Jeff Liebl, an analyst at Smaby Group, Inc. in Minneapolis, said commercial sales of parallel systems are already growing briskly (see chart, page 41). "But if they're going to get out of a [decision-support] niche market, it's going to be through clustering" of SMP nodes, he added.

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Merlin delivers

By Esther Schindler

Interest in OS/2 is much higher than some people might imagine. Late on Thursday, June 13, IBM announced the availability of a beta release of the next version of OS/2 Warp, code-named Merlin. The demand was so high that by the following Monday, all 10,000 copies were allocated.

Computerworld examined this initial beta from the perspective of an existing OS/2 user. It's impossible to make authoritative recommendations based on completeness and reliability when dealing with beta code, of course; if the software didn't have bugs, it wouldn't be in beta.

Many of Merlin's enhancements are in the user interface. Speech recognition is included. IBM put a graphic artist to work on the desktop, changing the appearance and organization of the Workplace Shell. Merlin also supports OpenDoc, Java applications and TrueType. A few long-requested user interface features are included in Merlin, such as support for the Alt+Tab combination to toggle among applications. However, others — a configurable Number Lock setting, for example — still aren't supported.

PRODUCT REVIEW

Although Merlin has some "under the hood" architectural changes, many of them will be invisible to the average OS/2 user. Of special interest to software developers are the Open32 application programming interfaces, which will help Windows developers port 32-bit applications to OS/2.

The beauty of a user interface is clearly in the eye of its beholder. If you think Windows 95 is pretty, you'll think Merlin is pretty. But it's still OS/2 Warp underneath. Thus, if you

Merlin, *page 49*

CASE reincarnation

Data modeling tools simplify migration to client/server systems

By Dan Richman

CASE is dead. Long live the improved, repackaged CASE — now known as analysis, modeling and design.

Many vendors of computer-aided software engineering (CASE) technology — more than two dozen in the U.S. alone — have shucked that term, moved their products to the desktop and broken them into tools or modules to let users select only the functions they need. Those include logical data modeling (designing databases), physical data modeling (creating databases from models) and process modeling (designing applications to run against databases).

Sales of data modeling tools will grow 35% per year through the year 2000, predicted Mike Blechar, a research director at Gartner Group, Inc. in Stamford, Conn. In comparison, CASE sales fell by 2.9% from 1993 to 1994 and by 8.4% from 1994 to 1995 in a market totaling between $1.38 million and $1.55 million, according to International Data Corp. in Framingham, Mass.

Data modeling tools are hot because the switch to client/server systems is still under way, and such modules ease the transition, he said. About 10 vendors are active in some combination of data and

Data modeling, *page 49*

Sampling of some analysis, design and modeling tool vendors

Data modeling (Designing databases)	Logics Works Princeton, N.J.	*Erwin*
	Cayenne Software (formerly Bachman Information Systems) Burlington, Mass.	*Groundworks; Terrain*
	Sybase Emeryville, Calif.	*S-Designor*
Process modeling (Designing applications)	Popkin Software and Systems New York	*System Architect*
	LBMS Houston	*Systems Engineer*
Data and process modeling	Texas Instruments Dallas	*Composer*
	Computer Systems Advisers Woodcliff Lake, N.J.	*Silverrun*
	Asymetrix Bellevue, Wash.	*InfoModeler*

Source: Gartner Group, Inc., Stamford, Conn.

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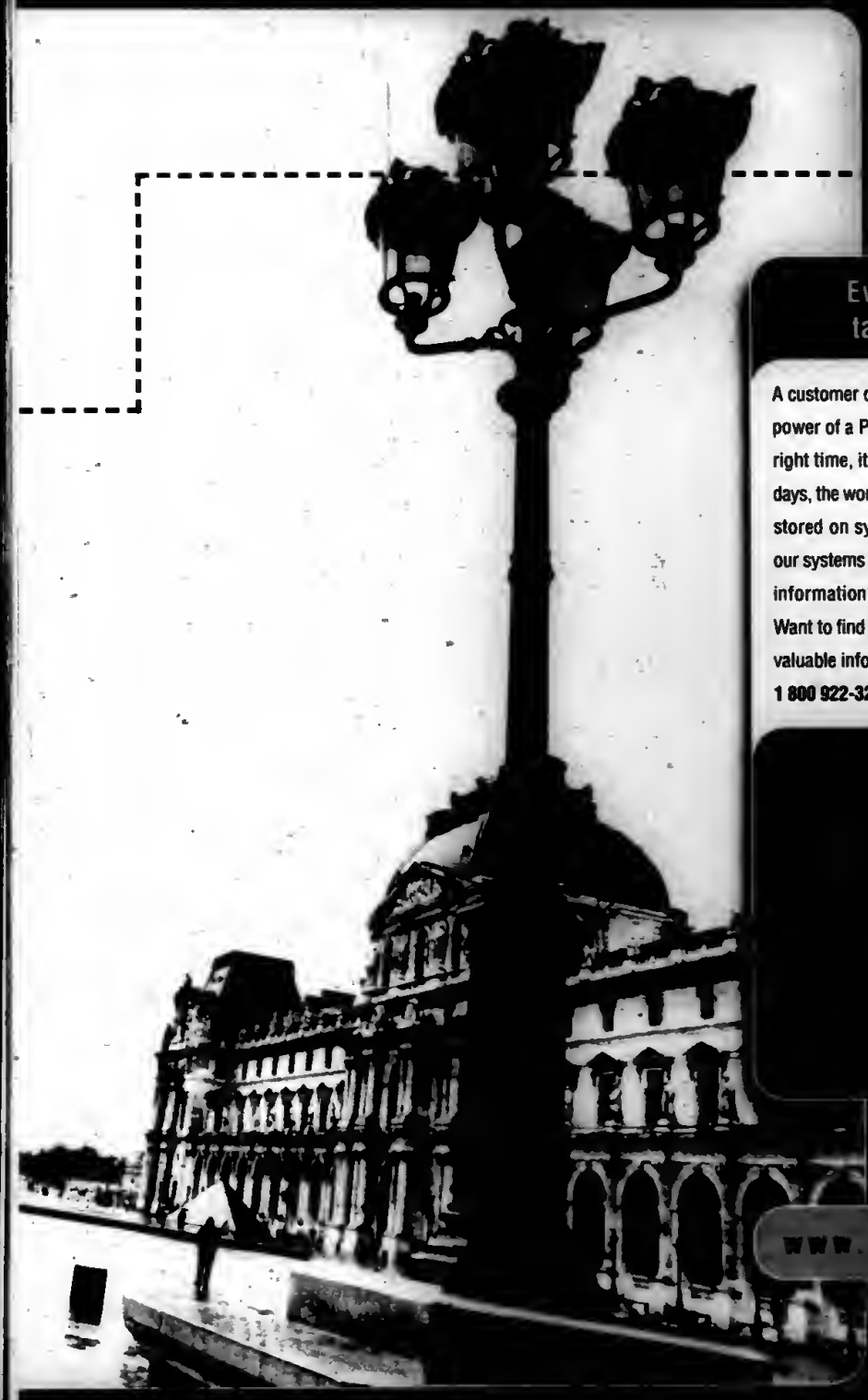

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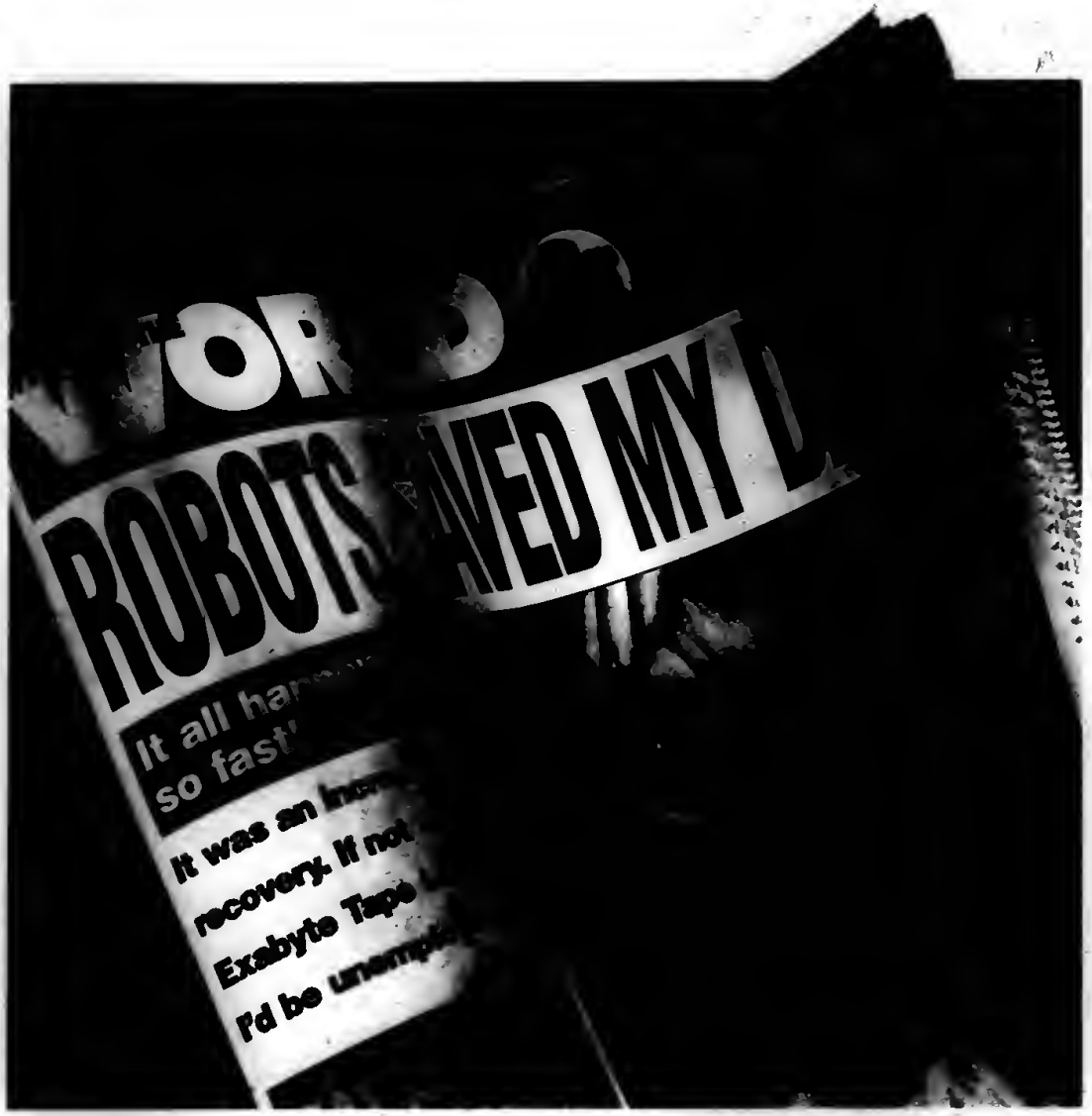

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Real-world groupware books

A couple of new reads try to go beyond the technology of groupware. The books address high-level groupware planning — bringing social issues into the mix — and simple examples of real-world applications that can get employees to use groupware.

Designing Groupware **by Geoffrey Bock and David Marca. Computing McGraw-Hill, New York; 231 pages, $40 (hardcover).**

As the title suggests, this book doesn't talk just about buying groupware and installing the software. Instead, the authors explore groupware, or "computer-supported cooperative work," in the context of how employees actually perform their work.

After providing basic guidelines on what groupware is all about, the authors stress that groupware must be designed on-site, not out of the box. No specific groupware products are addressed, so readers get a more theoretical understanding of the issues involved in a groupware installation without receiving information that is slanted to one vendor or another.

The most important point that readers will learn from this book is that groupware installations don't remain static; they are constantly evolving along with the social and organizational aspects of a company.

The book wraps up by talking about how groupware systems can help maintain organizational memory. This doesn't mean just the work a company does but the social and business context in which the work is accomplished, too. By explaining how to take these social changes into account, the book can help companies deal with the constant flow of employees in and out of key projects.

The Lotus Notes Idea Book **by Jeff Kovel, Kent Quirk and Jay Gabin. Addison-Wesley Publishing Co., Reading, Mass.; 391 pages, $24.95 (paperback).**

Now for the hands-on approach to groupware. This book takes the most recognized name in groupware — Notes — and explains it with specific applications that end users can prepare and use easily. Developers can get ideas, too.

As one user quoted in the book says, "I know I need Notes, but I don't know why." Each chapter provides simple application examples, progressing from Notes Mail to small group applications to company-wide applications and up to inter-company applications.

Examples include contact management, discussion groups, specification archives, customer feedback databases, corporate policy manuals, electronic newsletter publishing and survey collection.

The book doesn't really focus on the infrastructure and design issues for Notes administrators; it looks at the applications themselves. Users learn the reasoning behind the applications and how to progress through the Notes interface to create the databases and get users working. Case studies are included so that readers can see how other firms addressed similar problems.

—Tim Ouellette

Merlin

CONTINUED FROM PAGE 45

hate OS/2 Warp's manner of doing things, you'll probably hate Merlin.

To use the most dramatic enhancement to Merlin's user interface, speech recognition, you'll need a minimum of 16M bytes of RAM and at least a Pentium-based machine running at 100 MHz.

We tested Merlin on a 133-MHz Pentium-based PC with 32M bytes of RAM and had no performance complaints. Merlin supports both command-and-control ("Font, Times Roman, 12 point") and dictation ("Please order another case of dark chocolate ice cream."). Speech recognition works with any multimedia card supported by OS/2 (although problems have been reported by other Merlin users in the beta).

Command-and-control uses continuous speech, but speech dictation requires you to pause between every word. Speech recognition no longer requires individual user training (as it did with the earlier VoiceType Dictation), but accuracy is vastly improved when you take the time to acquaint the computer with how you pronounce words.

New functions in Merlin

- Speech recognition to manage applications and to dictate documents
- Graphical user interface where users can customize screen with colored fonts and selected backgrounds
- Supports OpenDoc and Java applications

Overall rating: B

Weak link

OS/2's weakest link has always been its installation. Merlin uses a more flexible format (also used in OS/2 Warp Server) than OS/2 Warp Connect, and more installations seem to be successful on the first try. Yet, in my opinion, the installation process still needs work. The questions it asks assume an understanding of computerese. I would prefer an installation based on "What will you do with this computer?" Then, if I say I want to use the Internet, the computer knows to install TCP/IP support.

Although the driver situation is much improved (Merlin has a CD-ROM full of them plus nicely implemented links to company Web sites providing more), it does have some rough spots, especially for older equipment. We had to download an Eagle NE2000 driver from the OS2USER forum on CompuServe, even though the driver CD-ROM claimed it was included. We never did get an older Standard Microsystems Corp. ElitePlus Ethernet card to install correctly.

To be fair, support for a 1991 vintage SoundBlaster Pro worked without incident. These are the issues that beta-testing is supposed to solve, so it's too early to draw any conclusions.

Problem areas

Some users report in online forums that the "fix" for OS/2's Single Input Queue — the mechanism OS/2 uses to listen for input — is an awkward kludge that doesn't always work properly.

Font rendering is also reportedly worse in Merlin, in that both Adobe Type Manager and TrueType outline fonts are displayed and scaled improperly. Most distressing, the beta bug-reporting system has bugs that keep testers from telling IBM about the problems they discover. As you would expect, IBM plans to address these issues by the time Merlin ships later this year.

Based on what we've seen so far, if you depend on OS/2 to get your work done, Merlin will be a no-brainer upgrade. If you've considered OS/2 Warp's user interface a major barrier in the past, Merlin might be enough to change your mind. It's too early to make strong recommendations, but our initial response is: So far, so good.

Schindler is a writer and reviewer in Phoenix and program chairwoman of the Phoenix OS/2 Society. She can be reached at esther@primenet.com.

Data modeling

CONTINUED FROM PAGE 45

process modeling (see chart, page 45).

Mark Coletta, a systems analyst at NASA Lewis Research Center in Cleveland, recently brought in Erwin, a $3,295 data modeling tool from Logic Works, Inc. in Princeton, N.J. It replaced a "tremendously more expensive," though more fully featured, set of tools from a rival vendor. "We preferred a narrowly focused tool that does the job perfectly," he said.

Modeling tools from Computer Systems Advisers, Inc. in Woodcliff Lake, N.J., more than doubled the speed at which major changes can be made to a 100,000-record data warehouse at Integrated Device Technology, Inc., a semiconductor manufacturer in Santa Clara, Calif.

When shopping for a data or process modeling tool, consider the following:

- **Platform.** Few run on anything other than Windows and OS/2.
- **Table capacity.** Some can handle thousands, others only hundreds.
- **Logical vs. physical.** Some can create only logical database structures, but others can generate the databases themselves in a particular relational database management system's SQL.
- **Number of vendors' RDBMSs supported.**
- **Notations (diagramming schemes) supported.** IDEF is a federal standard that may be required when dealing with the government. At least six other notations are also popular.
- **Number of developers who can share models.**
- **What is generated.** Do the physical models include triggers, stored procedures and other extensions unique to the target RDBMS? Do they include Powersoft Corp.'s PowerBuilder or Microsoft Corp.'s Visual Basic interface screens?

Briefs

Intranet tools bow

CenterView Software, Inc., a San Francisco start-up, has announced three products for building intranet applications. Database Neighborhood, set to ship by Sept. 1 for up to $2,000 per server, opens corporate databases to intranet applications. Data Director, available immediately for $1,295 per developer, is an environment for developing intranet applications in Visual Basic. ActiveSQL is a Microsoft Corp. ActiveX control that developers can embed in a World Wide Web page to create interactive database-oriented applications. It will cost $195 per developer and is promised by Sept. 1.

IBM details objects

IBM recently briefed customers on forthcoming mainframe versions of its object-oriented development technologies. The briefings — with extensive tutorials — included object-oriented Cobol and an MVS version of IBM's System Object Model object infrastructure, which was designed to interoperate with object technology from Microsoft, Digital Equipment Corp., Sun Microsystems, Inc. and other vendors.

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Application Development

Web developers face security quandary

Concerns voiced about ActiveX, Java components

By Frank Hayes

Developers of World Wide Web-based applications must decide between two radically different approaches to security when they use components based on Microsoft Corp.'s ActiveX or applets that incorporate Sun Microsystems, Inc.'s Java.

"The first thing people think of is, 'There's no way I'm going to let some browser download code and run it on my PC,'" said Michael Brando, an engineering manager at Perkin-Elmer Corp. in San Jose, Calif.

But that's exactly what both ActiveX and Java components do.

To protect users of ActiveX components, developers can register a "digital signature" that can be added to each component, according to Microsoft.

The signature system allows Web browsers to confirm the source and integrity of a component before it runs on a user's machine. The signature system is administered by VeriSign, Inc. in Mountain View, Calif.

But once running, ActiveX components have full access to a user's files, network connections and other machine resources.

In contrast, Sun's Java allows any applet to run on a user's machine but prevents it from gaining access to a user's files and other resources.

In effect, Java lets anyone into the house but watches all visitors like a hawk. ActiveX lets in only trusted friends — and if they turn out to be unworthy of that trust, they could steal the television or burn down the house.

ActiveX

- Uses digital signatures to block unauthorized components from being downloaded across the Internet
- Does not limit any component's access to files or other system resources

Java

- Does not block any applets from being downloaded across the Internet
- Blocks applet access to files, network connections and system resources

Security gaps

Both security approaches have been criticized by independent security researchers, who have turned up a succession of holes in Java's security blanket since it began shipping earlier this year.

But even greater problems come "if you also don't care about basic security, as Microsoft apparently doesn't," said David Hopwood, a researcher at Oxford University. Hopwood has also found Java security flaws.

Another researcher charged that VeriSign doesn't adequately check applicants for digital signatures. Kevin McCurley, a security researcher at Sandia National Laboratories in Albuquerque, N.M., said he was awarded digital certificates apparently without even minimal checks for authenticity by VeriSign.

In addition, users can turn off ActiveX's security checks and allow any ActiveX component to run, including those without any digital signatures.

In the end, users may have to depend on their own ability as much as ActiveX or Java security schemes to protect data. "If you don't want the machine to come down, then don't expose it to risk," said Michael Shoffner, vice president at Prominence Dot Com, an Internet development firm in Chapel Hill, N.C.

Data visualization software that stands alone in the crowd

By Sharon Gaudin

Holding up the adage that seeing is believing, Belmont Research, Inc. has come out with stand-alone data visualization and graphical reporting software.

Analysts and users say the software — CrossGraphsx — will help users spot and understand trends in their data. The package presents information in an array of graphs based on various parameters — instead of standard numerical tables or single graphs.

Data warehousing

"We're very excited [because this could] save staff years," said Ken Edmunds, a computer specialist at the U.S. Food and Drug Administration, which has been testing the software for a year. "Before, we had to dig through pages of graphs on different parameters. With this, we get an all-in-one overview."

CrossGraphsx was designed to partition data by various categories, including quantities, percentages or time frames such as year, month, date, hour or second. It is touted as capable of automatically splitting data into such subsets without programming.

CrossGraphsx is shipping now. It has a list price starting at $795 for all Windows platforms and starts at $1,595 per user for systems running on SunOS, Solaris and Hewlett-Packard Co.'s Unix.

"Data visualization tools can help you see trends already existing in your data warehouse without doing much else to it — trends you probably would have missed," said Robert Moran, an analyst at Aberdeen Group, Inc. in Boston. "CrossGraphsx does that well."

Frank Gillett, an analyst at Hurwitz Group, Inc. in Newton, Mass., said Cambridge, Mass.-based Belmont Research's innovation in extracting meaning from mounds of data may be moving the market to the next level.

Breakthrough

Gillett called CrossGraphsx the first visualization software that isn't embedded in other products, such as IQ Software Corp.'s IQ Objects and Microsoft Corp.'s Excel. "Data is a haystack, and visualization helps you see the patterns," he said.

But he added that CrossGraphsx is a sophisticated tool that may be more than many users need. He said users who are accustomed to having their visualization tools embedded in their larger programs may not change to stand-alone software. "It could be a long-term disadvantage because [some] would rather have it fit in naturally with their tools."

CrossGraphsx software *helps users understand trends in their data by presenting information in an array of graphs based on various parameters*

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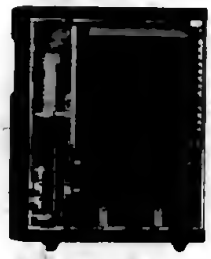

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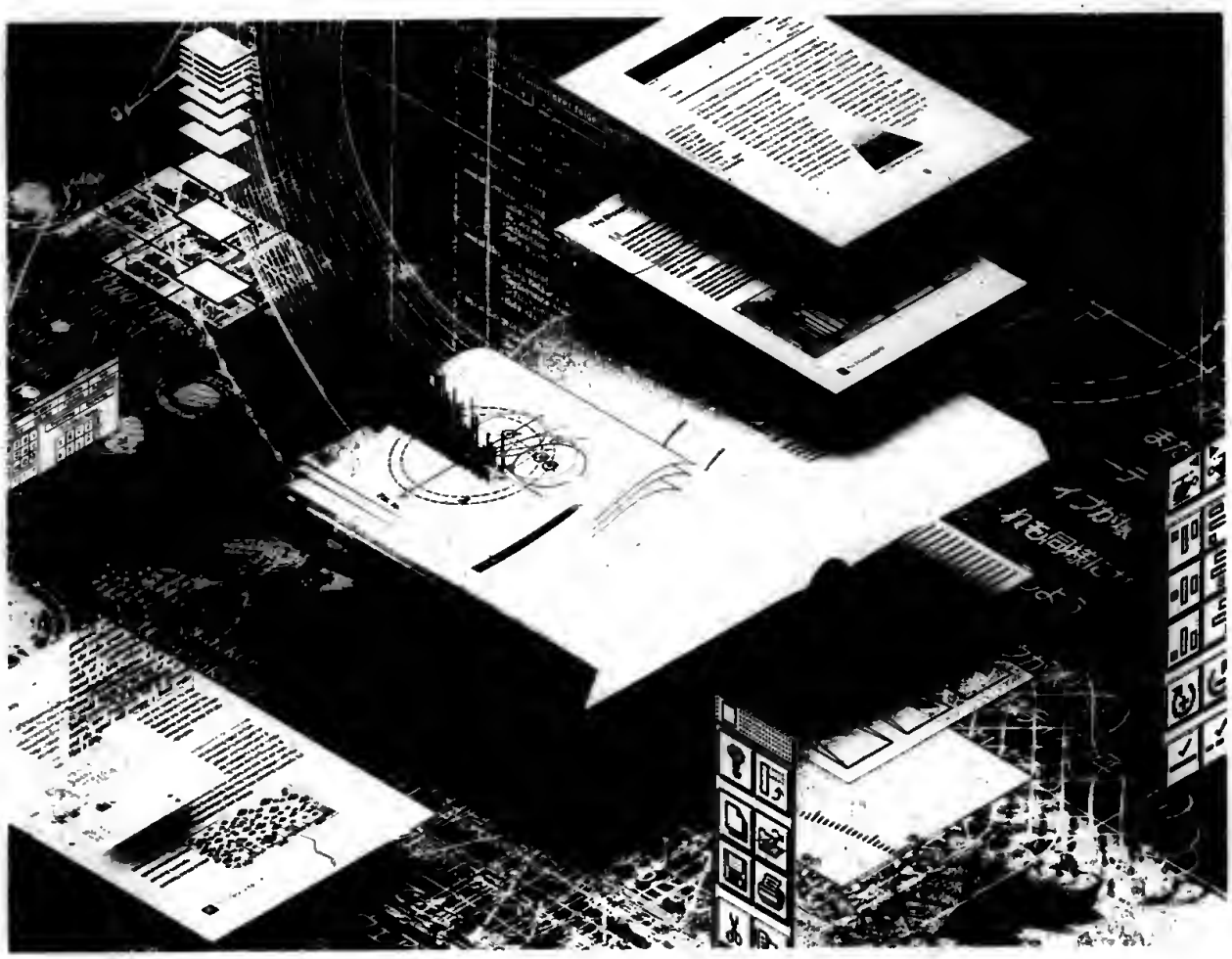

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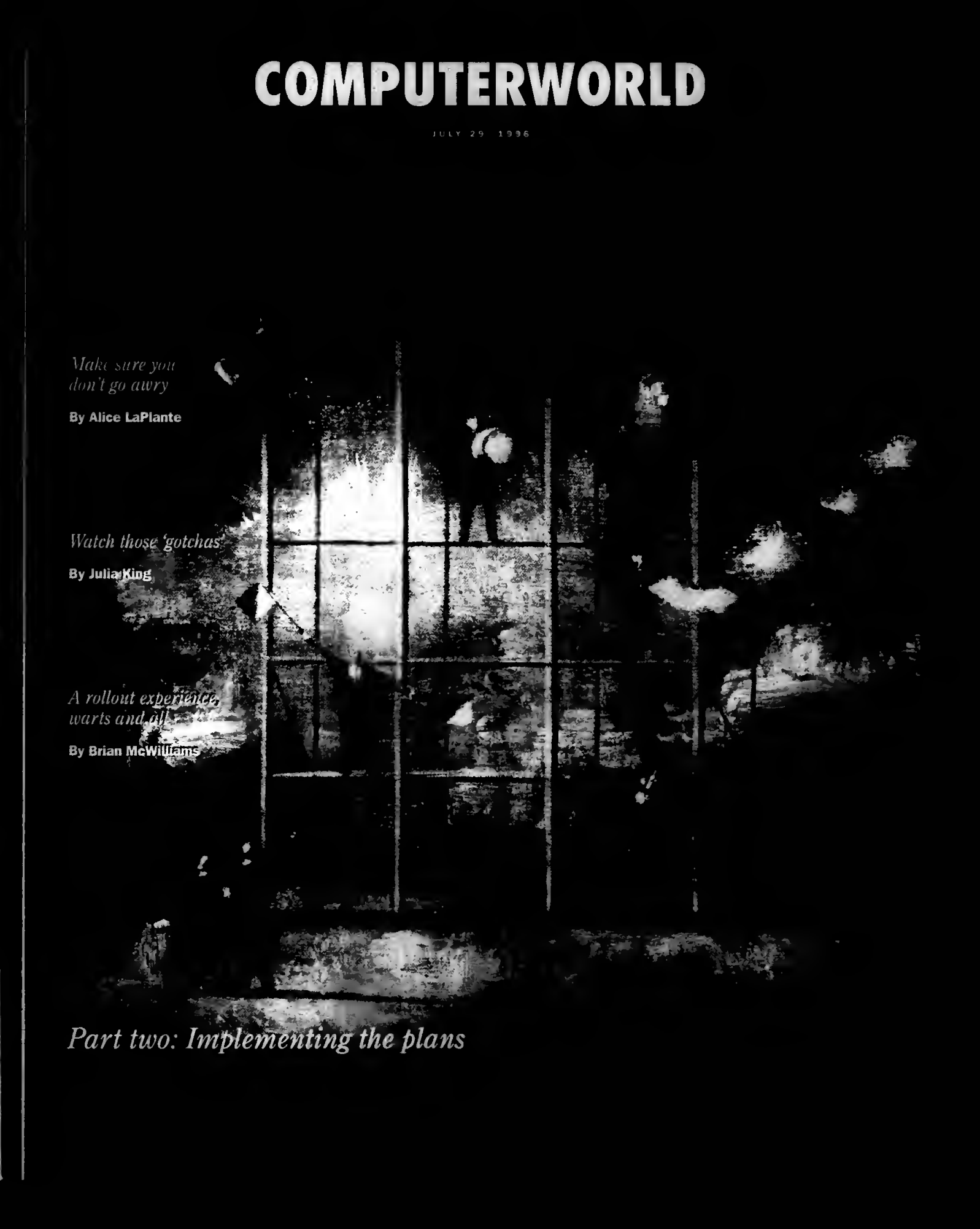

Make sure you don't go awry

By Alice LaPlante

Watch those 'gotchas'

By Julia King

A rollout experience, warts and all

By Brian McWilliams

Part two: Implementing the plans

The best laid plans

Don't become too attached to that beautiful blueprint of your new warehouse. Implementation requires constant rethinking and redesigning — especially once users enter the picture. **By Alice LaPlante**

Paul Tonnes, like almost every other data warehouse guru, has implementation horror stories to tell.

Tonnes, a data warehousing designer for Group Health Corp., a Seattle-based health maintenance organization, had a certain table-population methodology in mind when he initially designed his data warehouse, which was built using a Sybase Inc. database running on a Sun Microsystems, Inc. Unix server. But then reality hit in the form of serious performance snags.

"It took hours to populate tables that should have taken only minutes," Tonnes says.

The system was close to operational, the design was complete and the code had been debugged. No matter. Tonnes had to scramble for a work-around. He eventually found a way to import data into tables more efficiently, using a Sybase "bulk copy" procedure, that solved the problem.

Tonnes is not alone. Ask anyone involved in a data warehouse project and they'll tell you that they've learned not to be stymied by such problems. The key to keeping your sanity, they say, is to expect that a warehouse design will never be set in stone.

"Even after your architectural work is done, you're still shooting at a moving target."

Jack Sweeney
Director of Information Management Resources
Bank of Boston

"Even after your architectural work is done, you're still shooting at a moving target," agrees Jack Sweeney, director of information management resources at Bank of Boston. Sweeney's group started implementing a data warehouse two years ago.

Among other things, Sweeney had to throw out a number of the original end-user querying and reporting tools, because, despite having passed initial evaluations, the users couldn't figure out how to work with them.

Sweeney eventually formed an advisory board containing representatives from all lines of business that were using the warehouse. The group meets every three weeks to help him hammer out implementation issues as they arise.

How long is too long?

Is a year a long time to keep a system from full-scale implementation? Greg McFadden doesn't think so. He believes so strongly that change in a data warehouse is inevitable that he won't release a system for general use until nine to 12 months after coding is complete.

McFadden, project manager for the corporate information warehouse at Detroit Edison, allows a small group of users — perhaps half a dozen or so — to test the various warehouses under construction at the Detroit-based utility.

"Even if you've done a terrific job of designing these warehouses, you never know whether they'll really work until you let users go banging up against them," says McFadden. "I like to keep various projects in the oven — baking, if you will — until we're sure they're done."

How can management tolerate this leisurely approach to implementation? It can't afford not to. Typically, a data warehouse project is being implemented in conjunction with moving legacy databases onto a client/server architecture. So taking time to agree on data definitions and data elements for these warehouses actually helps with the design of the new client/server operational systems.

Can-do attitude

Besides being flexible, you must be innovative. If there is no product on the market that does what you need done, be prepared to invent one.

Motorola Corp.'s Semiconductor Products Sector, in Tempe, Ariz., found itself in that position four years ago when it designed a distributed Oracle Corp. data warehouse that was implemented worldwide via multiple interconnected nodes. Currently there are nine nodes; at least three more will be added this year. Although each database is physically separate, employees can log on at any time and get a view of all data that exists across all nine nodes.

This ambitious architecture led to technical challenges. Motorola was so far ahead of the technology curve in using distributed database concepts that the data warehouse team had to write its own Motif-based distributed tools. These tools manage replication of the nine Oracle distributed databases that reside on Hewlett-Packard and IBM Unix servers worldwide.

Now that Oracle has released its own distributed replication tools, "we're looking to see if it makes sense to replace our home-grown tools with theirs," says Mike Issar, Motorola's database administrator for the project.

Motorola faced the same problem with the end-user querying and reporting software. Because of the diversity of the client systems used within Motorola's worldwide operations, Motorola developed its own. A critical aspect of Motorola's end-user tools is their ability to "schedule" database reports, which are processed and delivered at the exact times or intervals specified by users. "This scheduling feature is very important to our users, and at this point, most of the querying tools on the market don't offer it," Issar says.

Power to the people

Often the most challenging issue that arises from a data warehouse rollout is not technical

The Do's and Don'ts of Data Warehouse Design

Do's

- Do build your data warehouse on a high value, high ROI set of subject areas, and measure the impact on the business.
- Do build a cross-functional data warehouse team of all IT disciplines and end users.
- Do build the warehouse in iterative steps, with incremental deliverables.
- Do build on a scalable architecture.
- Do build the warehouse in conjunction with an enterprise data architecture initiative that complies with an enterprise data model. The model should allow for easy integration of other subject areas.

Don'ts

- Don't underestimate the operational footprint of the warehouse.
- Don't commit to an aggressive rollout schedule.
- Don't underestimate the value of metadata, both business and technical.
- Don't allow premature "production" access to the data.
- Don't be afraid to ask for help from vendors and industry experts.

By Marc E. Goldberg, president of System Architecture Associates in New Orleans. Email: mgolden563@aol.com.

but organizational. Because warehouses can bring great power to users, they can upset the status quo.

Users at Arizona State University, a Tempe, Ariz.-based school with an enrollment of 45,000 students, know just how powerful a data warehouse can be. ASU's warehouse, begun four years ago, uses a Sybase database engine running on Unix servers from Sun Microsystems to cull data from a variety of legacy systems to provide a central clearinghouse for data on university finances, human resources, academic scheduling, financial aid and student demographics.

The warehouse had a liberating effect on the faculty. First, there was the academic department that won a $500,000 federal grant by querying the just-built warehouse on ethnicity statistics and generating extensive reports in just 24 hours. "If they had put in a request for an ad hoc report, they would have waited two weeks," says John Rome, assistant data administrator.

Then there was another department, long unhappy over what it felt was unfair allocation of classrooms, that armed itself with information from the warehouse after being told yet again that there were insufficient rooms to schedule courses.

"This department used the data warehouse to go into scheduling and facilities records and determine that there were indeed rooms available when they needed them," says Rome. The result? A confrontation with the facilities scheduling department that ended up in the office of the president.

But that kind of power comes only when users know what to do with the data that the warehouse produces, insists Jeff Chasney, senior vice president of IS and CIO at Vicorp Restaurants, Inc. The Denver-based restaurant-holding company controls the Bakers Square, Village Inn, and Angels restaurant chains. Chasney oversees an enterprisewide data repository that has been feeding several hundred data marts scattered throughout Vicorp's operations for more than two years.

His biggest challenge is "combating the idea that putting these tools in place will eliminate the need for thorough business analyses."

For example, one of his querying tools performs a moving average. "But do users understand what a moving average is?," asks Chasney. "Do they understand the anomalies that can occur? How can those affect the kinds of conclusions you draw?"

In short, having good data repositories and end-user reporting tools "doesn't negate the need for a solid statistical background, or for superb analysis skills," says Chasney. "Yes, you've given your users quicker access to critical information. But it's no substitute for basic knowledge and experience."

LaPlante is a free-lance writer based in Woodside, Calif.

Don't get blindsided

Watch out for these common 'gotchas' **By Julia King**

In a recent study of 100 information managers, *Computerworld* identified some tips for avoiding the top three business and technical problems involved in building data warehouses.

On the business side:

1. Manage expectations. It's important to start with realistic expectations. Most IS managers expect that building a data warehouse will be a lot like other information systems projects. It's not. It's an ongoing and volatile process. Data is continually being added and subtracted. Users and their information needs change constantly.

"You don't build a data warehouse in six months and then you're done with it, and this expectation needs to be set from the start," says Neil Raden, president of Archer Decision Sciences, Inc., a data warehousing consulting firm in Santa Barbara, Calif.

And remember, it takes an average of two to three weeks to apply that training, say both IS staffers and users.

2. Control the cost of implementation. As users learn how to work with a warehouse, they will begin to demand more information at faster speeds, which translates into more data storage capacity and greater processing power. This can blow the lid off the cost of the project.

So, start small — perhaps by using a data mart approach — and calculate return on investment for each step of the project. For example, give managers access to payroll data as opposed to all accounts payable records, suggests Brian Murphy, a senior analyst at The Yankee Group in Boston. This will help to limit costs, but limiting users' demands may be more difficult.

3. Train people to understand the data. Frequent turnover in data warehouse users means training must be continual.

Capitalize on current users' experience by having them write documentation from which subsequent users can learn. "We thrive on manuals here, which makes training from one person to the next fairly easy," says Carlos Cockerham, IS manager at Southland Printing Co. in Shreveport, La.

On the technical side:

1. Make sure hardware is compatible. Because of the pressure to stick to standards, IS managers often choose to go with their company's standard database platform for their warehouse. But that is not necessarily the best technology for a warehouse.

However, if you do buy hardware and software from different vendors, don't assume that they will work together. Demand proof. "Get your integrator to show you how the products are already up and working at another user site," says Alan Paller, director of research for The Data Warehousing Institute in Bethesda, Md.

2. Plan for plenty of storage space. As sure as the sun will rise, users will always want more disk space, and managers will always demand justification for the additional expense.

Expect disk space requirements to double in the first three months, then double again in six months, Paller says. "If you describe that kind of growth to your sponsor in the beginning and set the expectation for additional space you don't look like a fool later."

3. Make sure data is compatible. Different transaction systems may track dates or dollar amounts differently. These data sets must be reconciled before information is funneled to the warehouse. Another problem involves data from different applications that may be compatible but problems arise because the systems on which they run are not synchronized.

Finally, allocate more staff than you ever thought you'd need. "Plan on spending between 50% and 70% of your time on data compatibility and cleaning issues," says Yankee Group's Murphy. "You can plan for much, much more labor than you hoped to deal with data quality."

King is Computerworld's senior editor for client/server applications.

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Case study: Moen, Inc.

Moen IS discovers selling a data warehouse doesn't end once you get funding **By Brian McWilliams**

"It didn't take a lot of selling on our part for [management] to see what a difference the system could make."

Mark Zozulia
Manager, Information Services, Moen, Inc.

As technology jargon goes, data warehouse is relatively colorful, conjuring up images of shelves stacked high with operational information that knowledge workers pick off from aisles below. But in the summer of 1994, Andy Sills, Moen, Inc.'s CIO, was having a hard time bringing the metaphor to life for the company's business executives.

"We talked about a data warehouse for over a year," says Sills, "but we weren't able to paint a clear picture of its potential value to our executive staff."

Moen, a $600-million plumbing fixture manufacturer based in North Olmsted, Ohio, had been relying mostly on IS to fetch paper-based reports on sales trends, customer profitability and other key performance indicators. Five power users also knew how to coax reports out of the Amdahl mainframe using Focus, a 3GL report writer from Information Builders, Inc.

Sills, however, was convinced a data warehouse with desktop access tools would provide more timely and accurate decision-support information. But without buy-in — both literal and figurative — from top business management, the project wasn't going anywhere.

Tired of talking, Moen's CIO decided to show them. In September 1994, Sills and his manager of information resources, Mark Zozulia, built a prototype warehouse for sales history data, using evaluation software and hardware from a couple of vendors. They then brought in the executives and sat them down for a demo.

Where do I sign?

Jaws dropped when the executives saw sales history data displayed for the first time in a graphical format. Sills and Zozulia invited attendees to fire some questions at them to test the system. One vice president wanted to see sales by day for the month of October. After a few keystrokes, the answer appeared. Normally, it would have required hours if not days to produce.

"It didn't take a lot of selling on our part for them to see what a difference the system could make," Zozulia says. Indeed, during a subsequent private showing of the prototype, Moen's president asked, only half jokingly, "Where do I sign?"

But if Sills and Zozulia thought the battle was over there, they were sorely mistaken. They would soon learn that they would have to similarly wow the rank-and-file users if they wanted to achieve a successful implementation of the project. And the users were, in some respects, a tougher crowd.

Sills and Zozulia knew they needed to include users in the process. So while finalizing vendor contract negotiations in February 1995, they drafted users from across the company to be part of a design team. Some were chosen because they held key decision-making roles in the firm and had much to gain from the system. Others, such as Focus experts, were chosen because they could play devil's advocates.

"We wanted power users to feel the new system would do the job at least as well as the old way," explains Sills.

The team took an iterative development approach, with deliverables every six months, in an effort to keep the project on target without resources being pulled off. Phase one, which was to be completed by June 1995, loaded four years of sales history into an executive information system (EIS) format using PowerPlay.

In frequent meetings over the following months, the design team hammered out issues such as which canned reports should be in the EIS. Meanwhile, IS staffers on the team worked out data extraction issues, such as writing a C program to load data into Oracle and validate it against predefined business rules. Zozulia mostly ran the design meetings, tried to resolve disagreements and published minutes. But the design team was in no sense IS-driven, says McElroy. "The smartest thing they did was make sure we stayed focused on the user perspective and not on technology."

Although the team had cross-functional representation, Zozulia says there was a lot of guesswork in choosing which canned views users would want to see.

"We decided not to get too hung up on requirements definition. We opted to just get something out there and then tweak it if we had to," he says.

But rolling out a beta-quality implementation to masses of users across the company would kill the project, according to Sills. His strategy: Limit phase one to just 50 users, all of whom had to agree to shake down the system and suggest improvements for phase two. Keeping the initial group small also would prevent over-taxing the support process should users run into problems.

Despite the hiccups, early users were thrilled to have the new tools. "We can gather information faster and shoot less from the hip."

David Lingafelter
"Client" Group Product Manager
Moen, Inc.

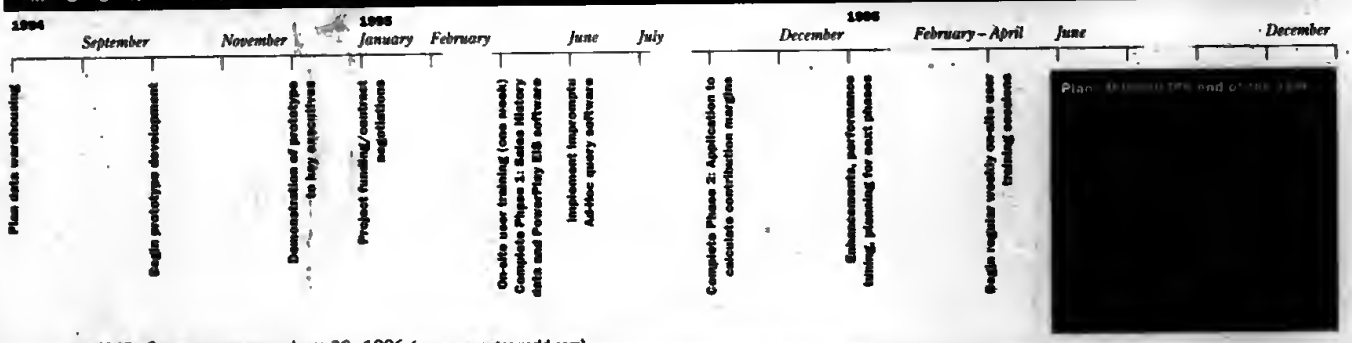
A day late and a dollar short

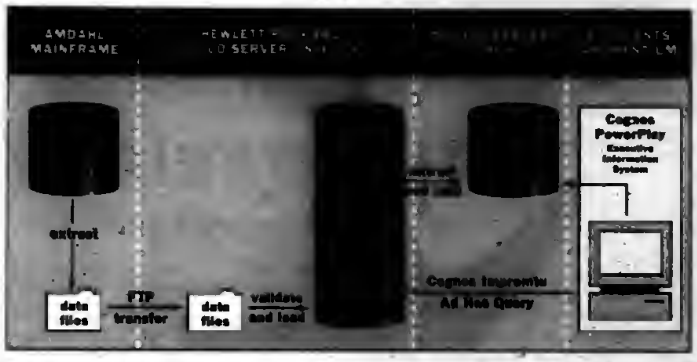
However, despite a week's worth of on-site training for users, the initial launch of the data warehouse was something of an anticlimax.

"We expected everyone to jump on the system day one and swamp us," Zozulia recalls, "but it was a good three months before people really began using the system every day."

A major hindrance to acceptance was the fact that users weren't sufficiently inspired by

MOEN TIMELINE





Moen's warehouse: From an Amdahl mainframe to an HP9000 server to a Novell server, users can query databases like never before.

the sales history application to make the work habit changes it required. "People had a hard time figuring out how to fit running their own reports into their already full business day," admits Zozulia.

Another reason was that phase one launched at a slow time in the business cycle, says David Lingafelter, a product manager and one of the early users. "We do all our strategic planning in the spring, so by June the system was a day late and a dollar short," Zozulia says.

Also slowing the ramp-up were desktop performance problems. "Everything worked smoothly if you stuck to the canned reports, but if you tried to do anything custom, your PC would crash," says McElroy.

Moen's help desk was slow to recognize and resolve such problems, further delaying acceptance, adds Lingafelter. "Things didn't get better until IS started directly following up and making sure problems were handled," says McElroy.

Users got a better glimpse of the system's potential when the Impromptu ad-hoc reporting tool was added in July 1995. Then came phase two, in December, an ambitious application enabling users to view margins by product, customer or channel.

"This was information people had never had before. It really helped them see the benefit," Zozulia says. Indeed, despite the hiccups, early users like Lingafelter and McElroy, whose jobs are all about making decisions under fire, were thrilled to have the new tools. "We can gather information faster and shoot less from the hip now," says Lingafelter.

Spreading the word

Today, access to the 20-Gbyte warehouse, which cost $400,000 for software and hardware and $350,000 for personnel, is open to any of the employees in the firm's headquarters. Nevertheless, the number of users has climbed slowly to around 70 users. But as new subject areas are added and use expands beyond corporate headquarters over the next two years, Zozulia predicts that 200 more will come aboard.

Although it's a "great technical implementation," the project's ROI, based on productivity improvements and cost savings over the legacy environment, is only "marginally positive," according to Steve Graham, vice president of software research for IDC Canada. The company studied the Moen warehouse project as part of its recent report on payback from the technology at 62 companies.

"The challenge for Moen going forward," says Graham, "is to increase use among the rank and file without alienating power users. That's when they'll begin to see a really solid ROI."

CIO Sills disagrees with IDC's assessment, saying that it has provided benefits such as improved decision-making that can't be captured using traditional ROI models.

Still, he acknowledges that there's a lot of work to be done before the data warehouse makes its full impact at Moen.

"The selling job doesn't end just because you get funding," Sills says. "You've got to keep marketing the warehouse and changing people's behavior, until it becomes part of the company's culture."

"The selling job doesn't end just because you get funding."

Andy Sills
CIO
Moen, Inc.

McWilliams is a free-lance writer based in Durham, N.H.

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Microsoft's Web-Based Enterprise Management isn't the only game in town, 57

The Enterprise Network

Not always a hit

Cisco's $6B buying spree hits rough spots

By Bob Wallace

"The downside or folly is that 50% of acquisitions fail, and anyone who believes otherwise is in for a rude awakening." — John Chambers, CEO, Cisco Systems, Inc. (*Computerworld Client/Server Journal*, February 1996)

But Chambers' behavior belies that pessimism. Cisco just completed its 10th acquisition and last week announced plans for an 11th — a $200 million purchase of digital modem and remote access vendor Telebit Corp.

Cisco seized the opportunity to acquire Telebit for its Modem ISDN Channel Aggregation (MICA) technology. The technology will let Cisco's remote access servers support analog and digital signals over Integrated Services Digital Network (ISDN) lines.

Cisco's John Chambers *says half of all acquisitions fail*

Telebit officials said MICA users won't need separate remote access servers for calls over analog ISDN lines at central sites. Today, that

Cisco, *page 56*

Monitoring standard has its shortcomings

By Patrick Dryden

The first step

Network management vendors are adapting their performance-tracking tools to support the impending Rmon 2 standard, a brand-new form of the Remote Monitoring (Rmon) specification that helps troubleshoot client/server traffic.

Standardization promises interoperability to give users more flexibility, but vendors pledge to continue enhancing their proprietary Rmon extensions to meet evolving needs.

"Right now, it's a tightly coupled situation: You're obligated to buy both probes and software from the same vendor," said David Caplan, a member of the corporate information technology technical staff at BBN Corp. in Cambridge, Mass.

Caplan said he expects the impending Rmon 2 standard to launch a whole new industry in which unbundled network management systems can work with any vendor's agents and probes.

Such interoperability and widespread adoption appeals to Nitin Naik, manager of multimedia and telecommunications systems at the NASA Classroom of the Future in Wheeling, W. Va.

"A standard gives us some assurance our monitoring tools will handle a basic set of information from a variety of vendor devices," Naik said.

This next step in Rmon tools lets managers detect more than high segment use or the loss of a server. "We can understand which applications cause the most utilization throughout the entire network and see what application causes the crash," Naik

Rmon 2, *page 57*

LOOK, MA! NO WIRES!

By Mindy Blodgett

Back in the Dark Ages — 1992 or so — long-distance truckers had to pull off the road and search for a telephone to give or receive vital routing information.

But more trucking companies are going wireless — using sophisticated satellite or radio technology to keep in touch with headquarters. They say the use of onboard computers for mobile data communications has become almost mandatory, and has led to better customer service, happier drivers and could potentially bring higher profitability.

Growing trend

"We started to see the use of wireless technology in trucking about five or so years ago, but in the past year, it has accelerated," said Lisa Peterson, vice president of government relations at the Minnesota Trucking Association in St. Paul.

"They are using it for a wide variety of purposes, but mostly for communication," she said. "If your business relies on on-time shipments and constant communication, it has gotten to be almost a requirement."

A handful of companies have emerged as leaders in offering trucking companies mobile data communications systems.

Those companies include Motorola, Inc., Dallas-based Highway-Master Corp., Qual-Comm, Inc. in San Diego and Rockwell International Corp. in Cedar Rapids, Iowa.

Most of the systems use satellite transmission. But last year, Rockwell began to offer a system that combines satellite links with the land-based radio data communications system from ARDIS Co. in Lincolnshire, Ill.

The idea has caught on with truckers because using the ARDIS system whenever possible cuts transmission costs, according to users.

Switching channels

With the Rockwell Pro2000SL Multi-Mode system — which costs about $4,000 per truck plus software and airtime — truckers use the ARDIS network while they travel through a coverage area. The truckers can then switch to a satellite system when they move out of range. Users can buy their own software.

The Multi-Mode system includes an onboard computer and antenna. According to Rockwell, satellite transmissions cost about $1.75 per kilobyte at peak hours. ARDIS transmissions cost only $1 per kilobyte.

Customers demand wireless

James Jones, director of information systems at Zumstein, Inc., a general commodities trucking firm in Lewisburg, Ohio, said the 185 truckers who use his system appreciate how easy the software is to use.

Customer satisfaction is higher, he said, because they can better track their products.

Wireless technology *has helped trucking companies communicate more efficiently*

Having a wireless communications system has become "almost a requirement because the customers demand it," Jones said.

He said Zumstein spends about $8,000 per month on airtime. Before Rockwell offered the Multi-Mode system, the company used a satellite-only system, and costs were higher, Jones said.

Randy Rhines, director of IS at Melton Truckline, Inc. in Tulsa, Okla., said about 330 truckers have used the Rockwell/ARDIS Multi-Mode system since May.

"We haven't put a pencil to a spreadsheet yet, but we think the system is saving us money in increased productivity," Rhines said. "It definitely makes life easier for the truckers, and customers now know where their loads are at all times."

Cisco

CONTINUED FROM PAGE 55

means assigning different telephone numbers to each remote access server. Users won't need racks of regular modems to handle analog calls, Telebit officials said.

Analysts said Cisco's string of purchases in the past several years is impressive, but it isn't unmarred. In fact, they said, it was just a matter of time before a Cisco acquisition started to unravel.

The high-flying internetworking giant bought Lightstream Corp. for more than $100 million in 1994. Cisco sought Lightstream's private-network Asynchronous Transfer Mode (ATM) switches and other resources that officials at Cisco thought could be used to build carrier-class ATM switches.

However, Cisco couldn't afford to pass up the burgeoning carrier switch market in which StrataCom, Inc. and Cascade Communications Corp. are the leaders.

So Chambers engineered a $4 billion merger with switching power StrataCom to turn things around.

Stay tuned...

Cisco CEO John Chambers has vowed to pursue four to six more mergers and/or acquisitions in the next 12 months.

One too many

That essentially gave Cisco two overlapping product lines. "Cisco's success rate had been great, but once they announced the merger with StrataCom, the Lightstream deal became the first black mark," said Eric Hindin, a senior program manager at The Yankee Group, a consulting and research firm in Boston.

So it didn't shock the industry when Cisco officials recently acknowledged they have stopped developing the Lightstream 2020 private-network ATM switch and pulled the plug on its planned replacement, the 2080.

Overlapping product lines are the flotsam left in the wake of acquisitions in a single market. The same thing happened after 3Com Corp. merged a year ago with Chipcom Corp., then dropped Chipcom's popular Galactica LAN switch.

One loyal Cisco user said it didn't take 20/20 vision to see the writing on the wall.

"This probably makes sense for Cisco," said Chuck Rush, global network architect at McDonald's Corp. in Oak Brook, Ill. "I would have been surprised if there was not some consolidation after the StrataCom merger [because] there's a clear overlapping of product lines."

Although he didn't disclose specifics, Rush said, "Cisco has assured me that my 2020 investment will be protected. Each user will probably be affected differently."

Analysts said Cisco needs to make sure that users with phased-out products aren't left stranded.

"Satisfied users are what make mergers and acquisitions a success, while angry users whose investments in products aren't protected are what tear these deals apart," said Daniel Briere, president of TeleChoice, Inc., a consultancy in Verona, N.J. "Angry users can seriously tarnish even the brightest vendor reputation."

New Products

On Technology Corp. has announced SofTrack Workstation Metering for Microsoft Corp.'s Windows 95.

According to the Cambridge, Mass., company, the product was designed to let Novell, Inc. NetWare administrators take advantage of special licensing agreements that extend concurrent licensing to include applications installed on local hard disk drives. It runs in the background on a Windows 95 workstation and complements the SofTrack 2.7 NetWare Loadable Module that resides on the NetWare server.

Besides metering local Windows 95 application usage, SofTrack Workstation Metering can be used to block, track or restrict the use of any applications. It is installed by the network administrator on the server and automatically installs itself on each workstation.

Prices start at $890 for a 25-user license.

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Web management specs go head-to-head

By Patrick Dryden

The Web-Based Enterprise Management (WBEM) specification proposed by Microsoft Corp. and other vendors isn't the only game in town when it comes to World Wide Web-based management.

Intel Corp., Microsoft and other vendors launched WBEM as an interface between existing management standards and the Web [CW, July 22]. But WBEM already has competition in some areas, and the competition has momentum.

Powerful Web-based tools will arrive later this year from vendors who are implementing the Java Management application programming interface pitched by SunSoft, Inc. and other vendors.

This approach combines a browser interface with programming capabilities. So vendors and users can create applets with interactive management functions [CW, June 10].

For example, officials at Technically Elite, Inc. in San Jose, Calif., said the firm late this year will incorporate Java applets in its network monitoring software to add browser-based control to the software.

Management tools

But officials said they don't expect to consider WBEM until the next generation of products, sometime next year.

Six other vendors previewed such Java-enabled management tools last month at PC Expo '96.

Users say they want such widespread access to management information, but it must be fully interactive.

Web access is the preferred future for network operators at Procter & Gamble Co. in Cincinnati, "but they need full interaction with management systems, not just the ability to view maps and reports," said Keith Pelphrey, management systems architect at the company. "I hope that Java or some language can enable that."

Rmon 2

CONTINUED FROM PAGE 55

said. Vendors are already adjusting their products for compatibility with the final version of the impending standard. For example, this month Frontier Software Development, Inc. in Chelmsford, Mass., will phase in two aspects of Rmon 2 that enable automatic discovery of application protocols.

Bay Networks, Inc. in Santa Clara, Calif., has added network layer-awareness to the Rmon agent for its internetworking gear. That first step will help managers track client/server conversations. Broader support to enable interoperability will come when upgrades ship at the end of the year, according to Bay officials.

3Com Corp. this week will introduce probes and analysis-software that support Rmon 2. And Hewlett-Packard Co. officials said their products will ship next month.

"At least the fundamental information is there to help us manage a multivendor environment," said Joe Askins, director of data communications at Arizona State University in Tempe. "But vendors still will develop their own proprietary tweaks to keep ahead of each other."

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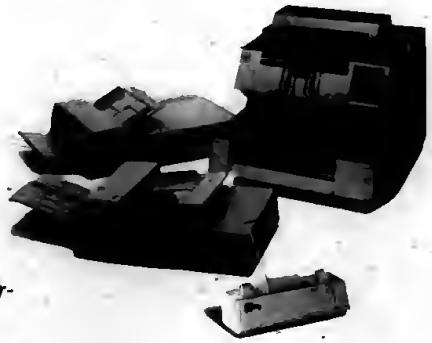

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Vignette buys CNET technology to develop Web server product, 61

The Internet

In the 'net shall we trust

Security standards sought to boost electronic commerce

By Gary H. Anthes

The National Institute of Standards and Technology (NIST) is attacking the chicken-and-egg problem of electronic commerce.

Electronic commerce won't take off without a security infrastructure to protect users, but vendors have been slow to invest in a security foundation because there is so little commercial activity to support it.

NIST, an agency of the U.S. Department of Commerce, recently announced a research and development partnership with 10 companies involved in communications, electronic commerce and information security. The partners will develop interoperability standards for public-key infrastructures (PKI) that will let users who may not have met confidently exchange digitally signed documents.

Projected worldwide electronic data interchange (EDI) revenue

	1996	2000
EDI without Internet support	$1B	$1.5B
EDI with Internet transport	$200,000	$8M
EDI via World Wide Web	$100,000	$800M

*Rounded off

Source: Forrester Research, Inc., Cambridge, Mass.

PKIs are built on trusted "certification authorities" that digitally sign public keys to attest to their authenticity.

"If a person in Italy selling marble gets an order out of the blue from someone in Singapore, how are they both going to know they are talking to legitimate people?" asked Mack Hicks, vice president of interactive banking technology at Bank of America in San Francisco.

Hicks heads a committee of CommerceNet, a Menlo Park, Calif.-based consortium of companies that is working with NIST to demonstrate multivendor interoperability in a PKI — which would provide public-key certificates and other services — by the second quarter next year.

Groups such as CommerceNet and NIST are trying to resolve the chicken-and-egg problem, Hicks said. "Everybody knows a PKI is needed, but most people are waiting for it to spring like Athena from the head of Zeus — full grown."

The NIST partners will develop a minimum interoperability specification for PKIs, which will be given to anyone building a PKI component. Each of the corporate partners — which include AT&T Corp., Motorola, Inc., VeriSign, Inc. and seven others — will contribute their public-key products to a NIST laboratory for analysis.

NIST will develop the interoperability specification and will build a prototype and a reference test suite based on it. Companies and other standards groups may use the test suite to evaluate the interoperability of their products.

Online commerce, *page 61*

BIONET

Intranet helps researchers cross-pollinate

By KIM S. NASH

You probably imagine biotechnology researchers hunching over lab tables, swishing liquids in between beakers and test tubes.

But at Roche Bioscience, you are just as likely to catch them converting Microsoft Corp. Word documents to Hypertext Markup Language (HTML).

The Palo Alto, Calif., division of the Swiss Roche Holding Ltd. specializes in nervous system and inflammatory problems such as urinary tract disorders and arthritis.

Roche Bioscience invented Aleve, an over-the-counter pain and antiswelling medication.

The company's intranet, which connects several Roche divisions worldwide, has produced better and faster information sharing among groups separated by geography and technical specialty, said Seth Michelson, director of research support and information services.

The first intranet application last year was a simple telephone directory. Then came a company newsletter. Now, Roche scientists use Netscape Communications Corp. World Wide Web servers and browsers that run on Unix machines, PCs and Macintoshes to swap research results, discuss findings and connect to online public information resources.

Previously, much of the cross-pollination that happened between chemists and physiologists, for example, was mostly watercooler talk and other casual encounters.

"We are able to coordinate with colleagues in Japan and England and others working on similar programs," Michelson said. "It's wonderful."

Opening intranets to outside partners would be "nice, but security is not as simple."

–Seth Michelson
Roche Bioscience

Meetings are more productive and decisions get made faster, said Phyllis Whiteley, head of the inflammation and immunomodulation department.

Members of Whiteley's team come to meetings prepared. Rather than exchange data at the gathering, scientists discuss and swap information online before they get together. "Now meetings are where decisions about which direction to take or which experiments to perform [are made]," Whiteley said.

Do it or else

That kind of "knowledge base" is the best application for an intranet, said Jerry Grochow, a consultant at American Management Systems in Fairfax, Va.

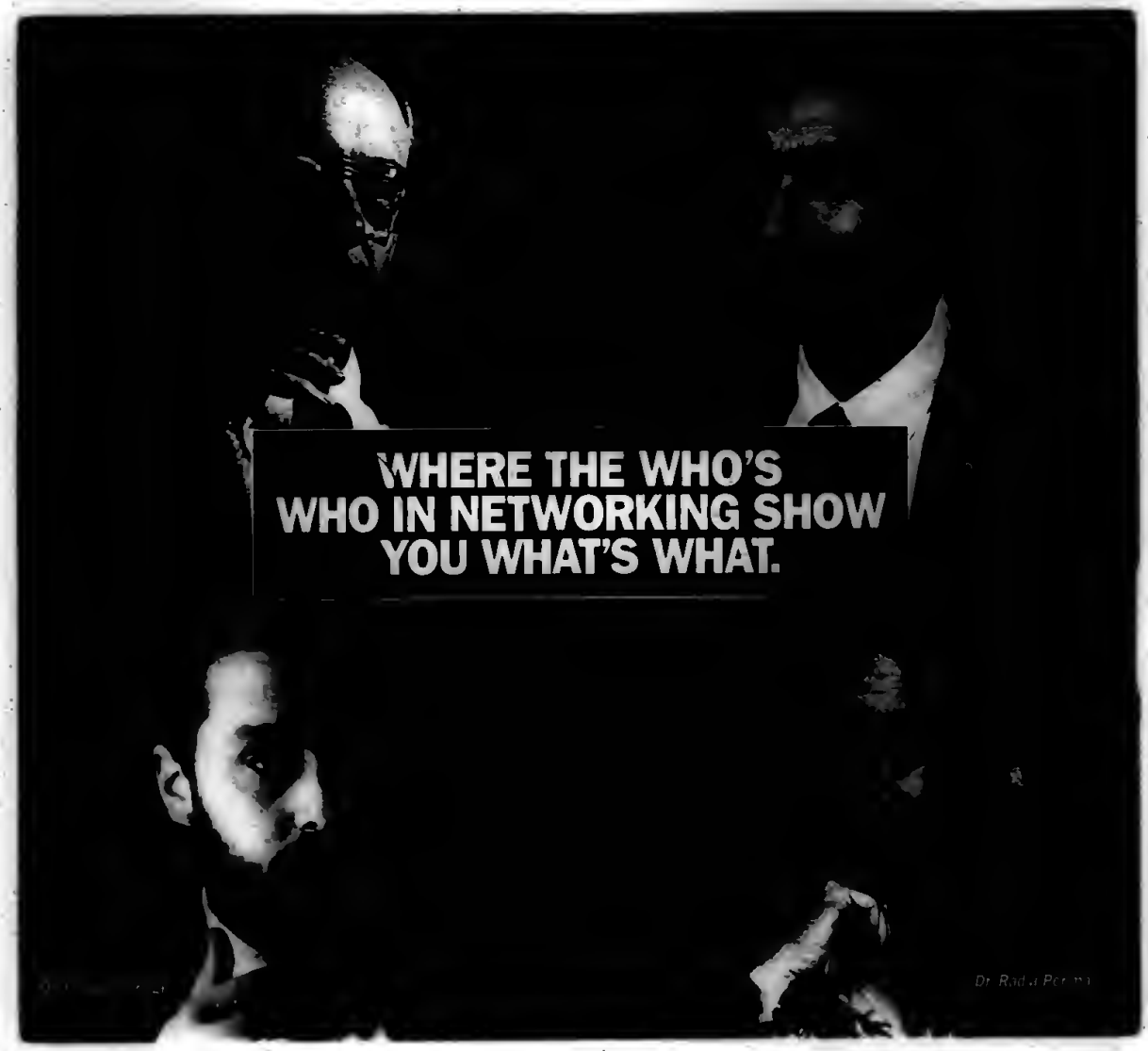
"It's a short-term competitive advantage," he said. "Long-term, everyone will be doing it or be out of business."

IS is equal partners with end-user scientists in creating intranets. In fact, a lot of the construction is done by the users themselves, including HTML conversion and site design.

Whiteley's month-old Web site, for example, contains meeting minutes, recent research findings, discussion forums and links to outside libraries.

Previously, Whiteley's workers exchanged data via shared drives on networked file servers. That didn't work well for graphics, nor was it easy to use.

"You had to keep reminding the Mac people to name files so that the PC people could find them," she said.



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Vignette paints the Web server scene

By Mitch Wagner

You have seen CNET, Inc.'s World Wide Web sites and watched its televisioo shows. Pretty soon, you will be able to use the software.

Vignette Corp., an Austin, Texas, start-up, bought the server software used by CNET to support 1.3 million hits per day on its sites for delivering online news, searching the Web and finding shareware. The CNET sites comprise the equivalent of tens of thousands of pages. Much of the information is stored as structured data in Sybase, Inc. databases and converted to Web pages as users request it.

Server software

Laying the foundation

Vignette plans to use the Presentation of Real-Time Interactive Service Material (PRISM) software as the basis for a oew commercial Web server product aimed at large Web sites. The product also will include software from Andromedia, Inc. that was designed to track traffic patterns on a Web site.

The Andromedia software — scheduled to be available late next month — reports how many hits a site receives, which pages are requested in what order and other traffic patterns.

Vignette's new server product is due to go into beta-testing in October and will become generally available by year's end.

It will support databases from Oracle Corp. and Sybase and will run on Windows NT and common Unix variants. Pricing hasn't been set.

Sam Gassel, a technical manager at Turner Broadcasting System, Inc. io Atlanta, said commercial software that runs large Web sites could be very attractive. Gassel helps manage the CNN Interactive Web site (www.cnn.com).

"Almost anyone would want to buy the software rather than build it," Gassel said. "The content is the most interesting thing."

But the software would have to match a company's way of doing business before it will be accepted.

For instance, some companies reqoire that Web cootent be approved by several managers before it is posted.

"If it's customizable, there's going to be a learning curve, and if it's not customizable, there's a question of whether it does what you want," Gassel said.

Vignette stands to gain something very rare on the Internet: software with a proven track record.

Other server systems for managing very large Web sites have just been introduced by Oracle; Next Software, Inc.; Broadvision, Inc.; Applix, Inc; and others.

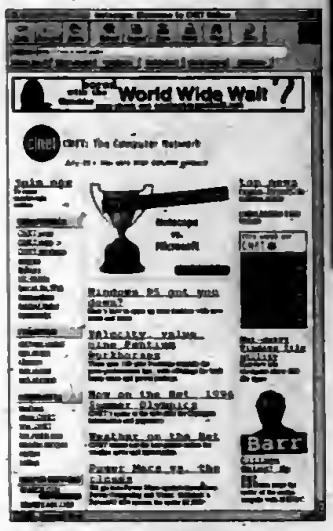
Didn't want to do software

Apart from an equity investment in Vignette and a seat on Vignette's board, CNET gets to leave a business it never wanted to be in: software development.

"When we first started out, we had no intention of building this," said Halsey Minor, CEO of the San Francisco company. "But we couldn't find anything like it."

PRISM was designed to allow nontechnical people to create content using their favorite graphics or word-processing tools. That content is stored in a relational database.

Separately, production staff builds Hypertext Markup Language (HTML) templates that will control how pages look online. When a page gets called up, the templates and content are merged. Frequently used pages get stored as HTML documents, ready to view, while less-popular pages are broken down and stored as components.



CNET Web sites *such as the one above can attract 1.3 million hits a day. Vignette is basing CNET's server software. It hopes to develop a product for large Web sites that need to offer information at high throughput speeds*

Online commerce

CONTINUED FROM PAGE 59

Northern Telecom Ltd. in Ottawa, a NIST partner, is helping the Canadian government establish a national PKI that will serve 15 million users by 1998.

The national PKI will allow government agencies to share information securely and enable the public to securely access government services.

The U.S. Social Security Administration lets the public retrieve retirement benefits estimates via the Internet with encryption-equipped World Wide Web browsers. But the ability to retrieve records of actual benefits payments awaits a PKI to support digital signatures protected by certificates, said Joho Sabo, director of planning and technology policy at the agency.

According to Donna Dodson, PKI project manager at NIST, the prototype PKI won't depend on one digital signature algorithm. It will support algorithms from the government and RSA Data Security, Inc. in Redwood City, Calif., and the "elliptical curve" public-key technology from Certicom Corp. in Toronto, she said.

New Products

Creating Media has announced Plug-In Playlets 1.5, a product for Sun Microsystems, Inc.'s Java Internet programming language.

According to the New York company, Plug-In Playlets 1.5 are ready-made Java applets that World Wide Web developers can use to dress up a Web page without having to program in Java. Each playlet comes with options for customization, including background color, background image, status bar, annotation messages and sound.

Plug-In Playlets 1.5 also lets users embed image maps in a single button for extended navigation designs.

Licensing for a single playlet starts at $150. The full set of seveo playlets costs $250.

▶ *Creating Media*
(212) 244-0862
www.creatingmedia.com

The Productivity Works, Inc. has announced PwWebSpeak 1.2, a speaking browser for the World Wide Web.

According to the Trentoo, N.J., company, PwWebSpeak 1.2 interacts directly with information on Web pages and translates page cootent into speech and simplified visual presentations with text elements of various sizes.

The browser understands Hypertext Markup Language constructs and has a command set that allows full-function interaction with information and different applications.

PwWebSpeak 1.2 supports additional speech engines and additional constructs, including client-side images and server-side security.

It supports browsing by page, paragraph, hypertext link, heading or word.

Pricing for PwWebSpeak 1.2 starts at $125.

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Sending voice over frame relay may save brokerage bucks. 66

Corporate Strategies

R/3 figures in race for efficiency

Henkel streamlines European operations

By Julia King

Five years ago, information sharing among Henkel Group's five European business units was severely limited.

Like many companies with a corporate tradition of business unit autonomy, the German chemical giant's information systems were a hodgepodge of incompatible hardware and software. Getting a companywide handle on orders, sales and production meant long and laborious data conversions. "We recognized we couldn't afford independent, customized

Henkel, *page 66*

Henkel Group *consolidated R/3 systems at five European business units to allow for more efficient sharing of information among divisions*

Stanley consolidates inventory system with R/3 for AS/400

By Michael Goldberg

People at The Stanley Works know how to make a handsaw with the best of them, but the company's former inventory system gave its customers a hammering headache.

Each of Stanley's eight business units — from air tools to doors — had its own product numbering scheme, its own customer service teams and its own distribution systems. Stanley's customers, such as major retail chains, were becoming bigger in size but fewer in number. It was the kind of setup that cried out for a reorganization — and with it, a new look at Stanley's information systems.

As a result, the New Britain, Conn., company last year became a leading adopter of SAP AG's R/3 enterprise software on IBM's AS/400 servers. The migration is part of a two-year, $50 million technology and corporate re-engineering program centered around a customer support center.

The project, which should be completed by year's end, will bring 13 legacy systems at sites in North America to a common application and hardware platform.

IBM and SAP made R/3 generally available on the AS/400 July 1. Industry observers said the move was necessary to keep the AS/400 platform competitive with Unix and Microsoft Corp. Windows NT business servers.

"There's a very large interest within the AS/400 installed base to use R/3," even if they just want to evaluate the possibility, said Tom Bittman, an analyst at Gartner Group, Inc. in Stamford, Conn. Some of IBM's large AS/400 customers "may have moved off the [AS/400] platform rapidly if R/3 wasn't there," Bittman said.

Stanley's Jim Gustafson: *R/3 shift was in response to customer needs*

IBM-aware

The development of R/3 on the AS/400 also had to wait until IBM released its RISC-based servers with 64-bit processing capabilities, said David Peterson, president of Midrange Open Business Strategies, Inc., a consultancy in Rochester, Minn. Performance would have suffered too much on older versions of the machine, he said.

Stanley for years had been an IBM shop with MVS mainframes

Stanley, *page 66*

Bucking the trend, choosing Vines

By Laura DiDio

Some users are defying conventional wisdom — and network operating system migration trends — by installing Banyan Systems, Inc.'s Vines.

Among those newly deploying or expanding their Vines installations are Eaton Corp., an automobile and trucking parts manufacturer in Cleveland; Multicare, Inc., a nursing home management company in Hackensack, N.J.; and Bowdoin College in Brunswick, Maine.

Financial problems

Information systems managers at those firms said they are going full-speed ahead despite the Westboro, Mass., company's corporate woes, which include declining sales and contracting market share.

Market share for Banyan's Vines network operating system has shrunk from about 8% in the late 1980s to about 5%, according to International Data Corp., a research firm in Framingham, Mass.

Banyan's revenue has likewise contracted. Annual sales peaked at $150 million in the early 1990s; they are currently in the $110 million to $120 million range. Sales for the just-ended quarter were $30 million.

"We know Banyan has problems. But we didn't do any sharp pencil negotiations with any other [network operating systems] vendors but Banyan because StreetTalk met all our criteria," said Tad Macy, assistant director of computing and information services at Bowdoin College.

"We felt Banyan was worth the calculated risk because StreetTalk and Intelligent Messaging scales to a large environment better than Windows NT Server 3.51 or NetWare 4.1," Macy said.

In fact, StreetTalk is the most compelling factor in the users' decisions.

"StreetTalk and Banyan's Intelligent Messaging system are tremendous," said Derek Mumford, vice president of information technologies at Eaton. Eaton's upper managers last year mandated that the company speed its network upgrade from two years to one.

"If we decided to act like lemmings and just go with the flow to NetWare or Windows NT Server, we'd never be able to complete our network upgrade within a year," Mumford said.

Vines sprouts new branches

Company: Eaton Corp.

Products: Manufacturer of auto and truck components

Vines: 34 Vines implementations at 450 facilities in 26 countries

Annual revenue: $7 billion

Network setup: A mix of different network operating systems and other operating systems

Goal: To standardize on Banyan's Vines StreetTalk directory and Intelligent Messaging

Reason: "The StreetTalk directory lets us easily manage our entire network from our Cleveland headquarters with just four network administrators monitoring 12,000 end users. It's a Cadillac product," said Derek Mumford, vice president of IT at the firm.

Building block

Eaton has many disparate departmental LANs that run NetWare, Windows NT Server and Unix, but the foundation of its network setup is 75 Vines servers that run StreetTalk.

"If the directory fails on one server, the outage is local. It's easy to fix centrally. In fact, we can support all our users from our Cleveland headquarters," Mumford said.

Macy said StreetTalk's ease of configuration and the security in BeyondMail that prevents mail-spoofing by college students are two features that will save him and his fellow network administrators "a lot of headaches and cut down on management time."

Another new Vines user, Multicare, has 150 locations that serve about 10,000 users. Multicare is abandoning NetWare and adopting Vines/StreetTalk as its enterprise network operating system.

Computerworld Editorial Calendar

August - November, 1996

Issue Dates	Ad Closings Color*	Ad Closings B&W	Editorial Features	Show Distribution & Ad Readership Study Issues
Aug. 5	July 19	July 26	**Closer Look:** E-mail integration Approaches to the thorny problem of making multivendor e-mail environments work together	
Aug. 12	July 26	Aug. 2	**Buyer's Guide to Internet Security:** Corporations may be flocking to the Internet, but they are doing it with a wary eye. Fear of hackers and other security concerns have kept the corporate world from taking full advantage of the Internet's capabilities. This Buyer's Guide will look at firewall products and other technologies designed to support robust but secure Internet applications.	
Aug. 19	Aug. 2	Aug. 9	**Closer Look:** Object Databases **IS Leadership Series Supplement**	**Object World** San Jose 8/20 - 8/22 Starch Study
Aug. 26	Aug. 9	Aug. 16	**Buyer's Guide to PC LAN Management Products:** How do you keep the departmental systems running without dedicating an IS staff member to tasks such as backup and access management? A variety of products help IS off load those responsibilities, and they work in cooperation with enterprisewide systems management packages. This Buyer's Guide will look at the strengths and weaknesses of some of those LAN-level management products, and explore user needs. **Monthly Supplement: Intranets** **Special Report:** The Future of Computing	**CA World** New Orleans 8/25 - 8/30
Sept. 2	Aug. 16	Aug. 23	**Special Report:** Salary Survey Computerworld's annual salary survey captures salary levels for IS professionals from the CIO to help desk operator. A major undertaking, the survey results are broken down by company size, region and industry.	
Sept. 9	Aug. 23	Aug. 30	**Closer Look:** Netware **Special Supplement:** Network 25 A joint Computerworld, Network World special 60-page magazine profiling outstanding users of networking technology from around the world. In addition to a listing of 25 outstanding organizations and detailed company profiles, the issue will examine regional differences in networking, trends in technology and useful advice on emerging networking issues.	**Networks Expo** Dallas, 9/10 - 9/12 **Mobile World** Boston, 9/10 - 9/12 **Internet Commerce Expo** Anaheim, 9/10 - 9/12 Starch Study
Sept. 16	Aug. 30	Sept. 6	**Buyer's Guide to Internetworking:** With demand for bandwidth still on the rise, users are turning to technologies such as fast Ethernet and token ring switches. This Buyer's Guide will look at how users are addressing the bandwidth challenge and which products best meet their needs **IS Leadership Series Supplement**	**Network + Interop** Atlanta 9/18 - 9/20
Sept. 23	Sept. 6	Sept. 13	**Marketplace:** The best new books for IS managers **Special Report:** Top Web sites for IS managers **Monthly Supplement: Intranets**	
Sept. 30	Sept. 13	Sept. 20	**Buyer's Guide to Groupware:** The old groupware model went out the window with the emergence of the World Wide Web. Now, products such as Lotus Notes, Microsoft Exchange and Novell Groupwise XTD are being repositioned to act as gateways to the Internet. This Buyer's Guide will look at how those server-based products are handling the transition, and at some of the Web-based alternatives being offered by startups.	**SIM Fall Conference** San Francisco 9/29 - 10/2
Oct. 7	Sept. 20	Sept. 27	**Buyer's Guide to RISC Servers:** Enterprisewide applications often are being driven by multiprocessor servers based on Reduced Instruction Set Computer technologies such as PowerPC, Alpha, Sparc, MIPS and PA-RISC. This Buyer's Guide will explore the challenge of running the corporation on these products, and the strengths and weaknesses of some of the key vendors.	**Unix Expo** New York 10/8 - 10/10
Oct. 14	Sept. 27	Oct. 4	**Closer Look:** Videoconferencing Is it really ready for the desktop? A look at the state of the art in the PC space.	
Oct. 21	Oct. 4	Oct. 11	**Buyer's Guide to Notebook PCs:** They are the core computing platforms for a growing percentage of corporate users. Designed to work in hotel rooms, airports and in the office, notebook PCs pack the punch of desktop systems but carry their own set of technical challenges. This Buyer's Guide will examine the strengths and weaknesses of leading notebook vendors, and explore some of the issues that user organizations face when they roll out notebook-based strategies. **IS Leadership Series Supplement**	
Oct. 28	Oct. 11	Oct. 18	**Closer Look:** Java Development **Monthly Supplement: Intranets** **Annual Computerworld Campus Edition** (actual mail date October 31)	**Software Developers' Conf.** Washington, DC 10/29 - 10/31
Nov. 4	Oct. 18	Oct. 25	**Buyer's Guide to Network Operating Systems:** Complex, enterprisewide applications need a robust network operating system to be working in the background. This Buyer's Guide will explore the NOS buying process, and examine how well NOS products such as Windows NT, Netware, Banyan Vines, and OS/2 Warp Server support the corporate user.	

* Includes ads within special editorial features and premium positions

Editorial contacts (508) 879-0700: *Closer Look:* Johanna Ambrosio, *Buyer's Guide:* James Connolly, *Managing:* Alan Alter, *Special Report, IS Leadership Series, Best Places to Work:* Alan Alper, *Intranets:* Joe Maglitta

Computerworld Editorial Calendar November - December, 1996

Issue Dates	Ad Closings Color*	Ad Closings B&W	Editorial Features	Show Distribution & Ad Readership Study Issues
Nov. 11	Oct. 25	Nov. 1	**Annual Computerworld Skills Survey:** Where is the talent going? What skills do you need to succeed in an IS career? This expanded feature details which IS skills are most in demand — by region, industry and technology — and which ones are bringing IS professionals the greatest rewards.	
Nov. 18	Nov. 1	Nov. 8	**Buyer's Guide to Multimedia PCs:** The day of the simple DOS-with-floppy-and-hard-drive PC has long passed. Today's applications demand video and sound, not just a blinking cursor. New generations of processor chips pack power, and they are tightly integrated with video and sound technology, high-speed CD-ROMs, speakers and huge-capacity disk drives. This Buyer's Guide will examine the high-end desktop product offerings of key vendors, and explore the technology path being carved out by the industry at large. **IS Leadership Series Supplement**	**Comdex Fall** Las Vegas 11/18 - 11/22
Nov. 25	Nov. 8	Nov. 15	**Closer Look:** Outsourcing/systems integration **Monthly Supplement: Intranets**	Starch Study
Dec. 2	Nov. 15	Nov. 22	**Buyer's Guide to Decision Support Tools:** CEOs and other executives are demanding new levels of dynamic access to corporate data. They need reports that will help them make strategic decisions. That leaves IS managers to implement technologies such as OLAP and ROLAP and links that deliver relational data through new vehicles such as the World Wide Web. This Buyer's Guide will examine some of the key decision support tools, and explore how user organizations are leveraging new technologies to support executive decision making.	**DB Expo** New York 12/2 - 12/6
Dec. 9	Nov. 22	Nov.** 27	**Closer Look:** Software license management **IS Leadership Series Supplement**	**Database/Client Server World** Chicago 12/10 - 12/12
Dec. 16	Nov. 29	Dec. 6	**Buyer's Guide to Futuristic Technologies:** Technologies such as virtual reality display devices and sophisticated pagers may have a place in many corporate applications. This Buyer's Guide will examine some of advanced technology products that actually may prove useful for IS managers and their staffs. They aren't just for fun and games anymore. **Monthly Supplement: Intranets**	

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Issue Dates	Ad Closings	Custom Publications	Show Distribution & Ad Readership Study Issues
Aug. 12	May 31	**White Paper:** **Supply Chain Management** (part 3 of 4-part Manufacturing Directions Series)	
Aug. 19	June 21	**White Paper:** **RAID** (part 2 of 4-part Enterprise Storage Management Series)	**Object World** Starch Study
Sept. 2	June 21	**White Paper:** **Financial & Human Resource Applications** (part 3 of 4-part Enterprise Software Directions Series)	
Oct. 14	Aug. 16	**White Paper:** **Hierarchical Storage Management** (part 3 of 4-part Enterprise Storage Directions Series)	
Dec. 2	Sept. 27	**White Paper:** **Network & Systems Management: Adopt for Change or Get Out of the Way** (part 4 of 4-part Manufacturing Directions Series)	**DB Expo**
Dec. 9	Sept. 20	**White Paper:** **Systems & Network Management** (part 4 of 4-part Enterprise Software Directions Series)	**Database/Client Server World**
Dec. 16	Oct. 18	**White Paper:** **Client/Server Backup** (part 4 of 4-part Enterprise Storage Directions Series)	

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Global group for NT users forms

A global group has formed to bring together users of Microsoft Corp.'a Windows NT operating system.

The Worldwide Association of NT User Groups (WANTUG) will offer its members forums, user groups, education and information exchange, officials said. WANTUG (www.wantug.org) initially will comprise existing NT user groups from Australia, Belgium, France, Russia, England and the U.S.

The group will hold its first board meeting at Windows NT Intranet Solutions Conference and Exposition Aug. 26-29 in San Francisco.

— Rebecca Sykes, IDG News Service, Boston bureau

Voice over frame relay may save brokerage bucks

By Kim Girard

New York brokerage BCMG is piggybacking voice over its frame-relay network to conserve bandwidth and snip the cost of leased lines.

By replacing global leased voice circuits, the company expects to slash its annual $1.5 million bill by about 30%, said Donald Noonan, BCMG's vice president of global networking.

BCMG — which employs 80 people in London, New York and Singapore and serves worldwide investment banks — uses products from RAD Data Communications, Inc. in Mahwah, N.J.

BCMG has connected its New York and London offices with 64K bit/sec. frame-relay circuits. Last week, the company moved from dial-up LAN connections to a wide-area network.

The company plans to link its Singapore office and its clients to the frame-relay network later.

BCMG replaced its multiplexer with RAD's $3,900 MAXcess-3000, a 12-slot hub that supports up to 36 voice/fax channels and up to 72 data channels at rates of up to 384K bit/sec.

Users can add voice or data cards depending on system demand. The MAXcess-3000 performs the functions of the multiplexer and the switch.

By compressing voice at 8M bit/sec., Noonan can get 16 conversations on a 128K bit/sec. line. Any available bandwidth on the line not used for voice is used for data. With this system, critical voice and fax applications receive top priority.

Deciding factors

BCMG chose SITA, a global network communications provider, to manage its frame-relay network because the organization offers guaranteed end-to-end service and a network managed by one company, Noonan said.

Putting voice and data on one network could be considered risky. But Noonan said he is confident with frame relay because it offers built-in redundancy provided by multiple access points on the network.

"If the link between New York and London goes down, they reroute me," Noonan said.

Noonan said he notices little difference between his system and the public telephone network.

"Some people say it can sound slightly less lively because there's no background noise," he said. "It's clear. Sometimes people say, it sounds hollow."

Tim Burke, data communications analyst at The Yankee Group in Boston, said voice quality is much better today because of improved digital signal processing.

Though voice application isn't driving the frame-relay market, demand for the added service will push the big carriers to consider offering it, he said.

BCMG banks bandwidth

[redacted]

Old technology: Left with a multiplexer

[redacted]

Expected savings: About 30% of the annual $1.5 million leased-circuit costs

Stanley

CONTINUED FROM PAGE 63

and AS/400s at different data centers, said Jim Gustafson, vice president of information technology at the company.

Gustafson said his company knew SAP would be expensive, "but we wanted to make sure it would survive, that the technology would not be obsolete" in a few years. With the AS/400, Stanley had a familiar hardware platform with lower cost of ownership than the alternatives.

The adoption of R/3 is going slowly but relatively smoothly, Gustafson said. Initial development of R/3 applications started last year — even before it was available for the AS/400 — using a Unix-based RS/6000 system and an Oracle Corp. database. Porting to AS/400 using a DB2/400 database system was done over a weekend last winter, Gustafson said.

Slow, unit-by-unit rollouts of R/3 will continue until the end of next year. Gustafson said the first unit went live in May — about a month later than originally expected. "There have been high-profile difficulties transitioning to new systems in our industry. Our management knew about that, and the charge we had was not to impact customers," Gustafson said.

Profitable tradition

Established in 1843, The Stanley Works has 20,000 employees in 20 countries. It posted $2.6 billion in sales last year and boasts the longest record of continuous dividends of companies on the New York Stock Exchange.

Briefs

Instant market share

A small Montreal software developer will increase its installed base by 90,000 users when it signs a huge deal with defense contractor **Lockheed Martin Missile and Space.** Lockheed has inked a deal to standardize on Corporate Time, a group scheduling product from **Corporate Software & Technologies, Inc.** But some of Lockheed's 40,000 Macintosh users say they are a little apprehensive about the deal because there is currently only a Windows version of the product. A Macintosh release of Corporate Time is in the works, but there is no word yet from the company on when it will be ready.

Start cramming

Microsoft Corp. has teamed with **The Chauncey Group International Ltd.** to offer testing and certification of Microsoft Office 95 users. Office 95 users can pay $50 at one of the nationwide testing centers and take an exam to determine their Office 95 skill level.

MOMA to expand

The vendor-driven **Message Oriented Middleware Association** (MOMA) is trying to attract more users. MOMA, which is developing middleware interoperability specifications, created a user group that will hold its first meeting at Object World '96 in August. The organization eventually hopes to expand its user membership from five companies now to between 25 and 50 firms.

Henkel

CONTINUED FROM PAGE 63

systems development [when] our focus was internationalization," said Eckart Dieckmann, manager of Henkel's international SAP support center in Dusseldorf.

Standard setting

So in 1994, Henkel executives decided to standardize on SAP AG's R/3 integrated client/server financial and manufacturing software. Today, each of the company's five European units are in production with at least one R/3 module. In each case, between 30% and 50% of the configuration work was done in a standard way by the company's central IS organization in Dusseldorf. The rest of the work is customized by the various business units.

Business affiliates run separate "instances" of R/3, complete with their own databases and custom R/3 routines. The plan is to link these separate systems — via SAP's application link enabling (ALE) middleware technology — to a central R/3 server that houses data and applications for corporatewide functions, such as materials purchasing.

For example, individual affiliates currently purchase goods and supplies separately.

But once ALE is implemented beginning next year, contracts and information about orders and deliveries "will be stored on the server, but operations will be done directly with individual units," Dieckmann explained. That could save the firm millions of dollars through high-volume discounts from suppliers, he said.

But getting ALE up and running requires a lot of up-front work to standardize data. To accomplish that, Henkel has set up a team that comprises representatives from the different units to develop common definitions for all business terms and transactions.

"Running different instances of R/3 was not the way [R/3] was originally designed, but SAP recognized that there's a big desire in its client base — in Europe and the U.S. — to support that kind of implementation," said Jim Shepherd, vice president of research at Advanced Manufacturing Research, Inc. in Boston.

Dieckmann said Henkel's ALE-based approach to implementing R/3 companywide offers the best of both worlds. Henkel achieves software standardization while its business units — whose product lines include detergents, cosmetics and adhesives — continue to operate independently using individually modified R/3 software.

Name recognition

With some 11,000 brand products, Henkel is as familiar to European consumers as Procter & Gamble is to U.S. households.

"Can we do business on the Internet without getting

bamboozled

by some wily hacker?"

COMMERCE

Talk to ten Internet experts and you'll get ten different opinions about the future of business on the Net. But the bottom line is this: Internet commerce will grow only as fast as confidence in the security of the Net grows.

Fortunately, our confidence has grown pretty fast over the last couple of years. IBM SecureWay™ includes a variety of services and products that, over time, will make exchanges across the Internet even more secure than nonelectronic transactions.

For example, the Secure Electronic Transactions protocol, developed using iKP multiparty payment protocol from IBM Research, allows buyers, sellers and credit card companies to be joined in a single Internet transaction that is secure, confidential and verifiable.

Our Cryptolopes™ technology promises to revolutionize online publishing by providing a mechanism for controlling distribution of copyrighted materials.

And, of course, IBM is at the forefront of network security with powerful firewall, encryption and access control technology, not to mention one of the largest private secure business networks in the world – the IBM Global Network.

To learn more about IBM SecureWay and our secure transactions technology, visit us at www.ibm.com/security or call 1 800 IBM-7080, ext. G122.

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Analysts: Expect IT surge from smaller players

By Kristi Essick

The global information technology marketplace will continue its steady growth through the year 2000, with emerging markets playing an increasingly important role, according to International Data Corp.

While the U.S. leads the global PC market with 37.5% of total worldwide sales and Western Europe is second at 28.5%, emerging markets — such as India, Brazil, Malaysia and Israel — will see tremendous growth in the next five years, according to the Framingham, Mass., research firm.

The analysts' findings were presented recently in Santa Clara, Calif.

The results were based on interviews with information technology professionals, home PC users and managers of small and midsize businesses in 55 countries.

Emerging markets are taking on greater weight in the global information technology industry, the analysts said. For example, Israel last year had the highest per-capita information technology spending in the world, purchasing approximately $2.1 billion worth of computer equipment. And Turkey saw a 61% increase in the number of PC units shipped in the country last year.

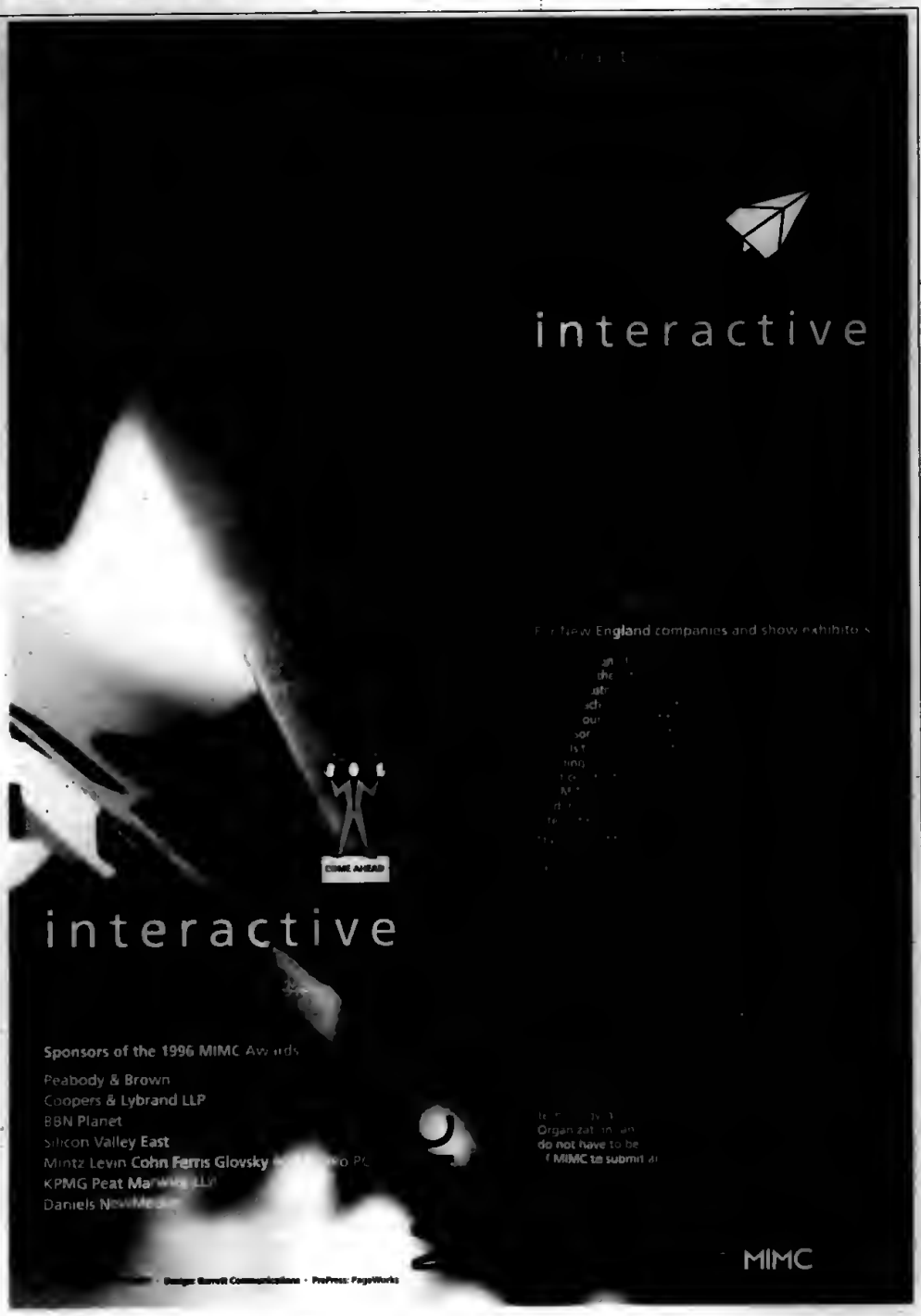
China, considered a risk by most firms that want to expand overseas, grew 104% in networking hardware sales last year. Japan — seen by most as a surefire market — grew only 57% in the same area.

Market trends

Other highlights of the IDC presentation included the following:

- 17% of large and midsize companies worldwide plan to use the World Wide Web "heavily." Twenty-five percent to 30% of European and Japanese companies will install Integrated Services Digital Network technology in the next year, while the number is "very low" in the U.S.
- While the U.S. accounts for only 5% of the world's population, it accounts for 42% of global information technology spending. Asia accounts for 56% of the world's population, but only 24% of IT spending.
- 89% of South Korean first-time PC buyers say PCs will be useful for placing phone calls, whereas only 50% of Americans plan to make Internet calls.

Essick writes for the IDG News Service at its San Mateo, Calif., bureau.



Brief

IBM's intranet services

IBM's Global Services group last week announced two sets of intranet-building services. SmoothStart was designed as a starter kit. It includes consulting, educational seminars — at $795 per person — strategy workshops, application development and World Wide Web page design and posting. The SecureWay services involve installing firewalls, testing for hacker vulnerability and detecting and eliminating viruses. Except for the seminars, all the services are priced according to the scope of a user's project, IBM officials said.

"Now that my company is on the Internet, will a fancy port scanner algorithm make

mincemeat

of my firewall?"

DEFENSE The Internet lets your company open its doors to millions of potential customers, partners and contributors and, unfortunately, some potentially dangerous hackers, crackers and online troublemakers.

That's why we at IBM have some dedicated hackers of our own. We call them "ethical hackers." Working with the IBM Global Security Analysis Lab, these scientists explore the cutting edge of hacking techniques to develop better and better security countermeasures. And, as part of IBM's Security Healthcheck, they'll even try to break into your network (with your permission, of course) to look for weak spots and strengthen defenses.

Where the healthcheck leaves off, IBM's Emergency Response Service takes over. On call 24 hours a day, seven days a week around the globe, the response team makes itself intimately familiar with your network and systems ahead of time so that, in an emergency, they can respond quickly to close the breach and fix the problem.

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COMPUTERWORLD

Log on this week for an online discussion of IS perks.

Managing

Sweet deals

Perks: They're not just for top-level IS execs

By Kathleen Melymuka

A newly hired chief information officer negotiated a relocation package that included transporting his yacht from San Francisco to Long Island. Another CIO got his company to pay the legal bills involved in obtaining permanent U.S. resident status. A third got his extensive wine cellar moved to his new home.

The coveted key to the executive washroom has always represented much more than state-of-the-art plumbing, but perquisites, or "perks," have always been reserved for the elite. What about those who don't have yachts or international legal complications, or the guy whose "wine cellar" contains only a carton of Gallo?

What about managers of systems development, the systems architects and administrators and the key project managers? Does it make sense for midrange managerial candidates to try for some perks of their own?

"The simple answer is 'yes,'" says Jeffrey Leon, managing director and leader of the information systems practice at Russell Reynolds Associates, a New York-based recruiting firm.

Success in negotiating perks depends on your market value, your prospective employer's needs and compensation policies, your negotiating skills and, finally, a flexible definition of perk.

If there was ever a time for IS recruits to play the perk card, it may be now.

"Demand far exceeds supply right now," says Kevin Steele, president of Winter, Wyman & Co., a recruiting firm in Boston.

"Especially in information services, there is a scarcity of talent in some areas, and it's hard to drum up people," adds Christine Seltz, a spokeswoman for Hewitt Associates, a Boston human resources consulting firm.

But to succeed, you have to have the talent that's in short supply. If you're an average candidate, you'll get an average offer. If you bring cutting-edge skills and experience, the employer may sweeten the pot.

"There's a lot of hype around these technologies, but finding the few people who can actually do it is worth a premium," Leon says.

But before you haul your dinghy into dry dock, you need to realize that midlevel perks aren't quite the wine-cellar variety. Hot middle management candidates have been known to snag sign-on bonuses.

"When I was in the lower midlevel, there were almost always up-front bonuses, in most cases cash in the $10,000-to-$25,000 range," says Laraine Rodgers, an IS lifer and principal of LR Associates, a Scottsdale, Ariz., consulting firm.

There are also guaranteed year-end bonuses, bonuses for staying — paid over several years — or relocation allowances. But the amounts of monetary perks usually are limited by corporate policies. You might try to get around strict policies by suggesting an early review tied to a raise or bonus. "Companies will put certain milestones and criteria in place and offer early reviews when the employee achieves milestones," Steele says. "It could be a raise or, more frequently, cash bonuses."

Stock options are generally reserved for the highest levels except in start-up companies, but start-ups are notorious for skimpy salaries and minimal benefits. "If the company goes public, you'll reap the rewards, but you won't see any other kind of benefits," says Mary Jane Range, a recruiter at Ingram & Aydelotte, Inc. in New York.

Firms tend to be looser with nonmonetary perks. You may be able to haggle an extra week of vacation, for example. Also easier to negotiate are employee development perks, such as opportunities for advanced training or commitments to attend major conferences. They're considered win/win deals for employers and new hires.

Rodgers' favorite perk came from Citibank when it recruited her in 1988 as a high midlevel vice president halfway through the prestigious two-year Presidential Key Executive MBA program at Pepperdine University in California. "The most important thing to me [was to] finish my MBA," she says.

Finally, the trend toward "lifestyle" perks is growing.

"Organizations are truly beginning to realize the value of flexible work arrangements," says Todd Manas, a human resources consultant at Towers Perrin in New York. "Things have different value to different people. Progressive organizations appreciate that and offer these kinds of arrangements."

Flexible hours, work-at-home days, telecommuting and job sharing are popular because they cost little and can mean more than extra money to new hires.

Robert Sternstein, hiring manager at Thomson Financial Services in Boston, says he is flexible. "We are willing to look at things on a case-by-case basis if it's not too outrageous," he says. "We do have some people working flextime; it's not the norm, but it's here. We do have people who telecommute."

Who gets perks depends less on the position than the person, he says. He looks at "what they bring to the table, their lifestyle, what they may need."

When making your own needs known, timing is critical. "I look at the recruiting process as a card game," Manas says. "When you throw your resume into the hopper, you've put your card on the table. Now it's the company's turn until they make you an offer. Then it's your turn to negotiate and talk about things outside the purview" of compensation.

Leon agrees. "I wouldn't suggest the first thing you say is, 'I won't go without a sign-on [bonus],'" he says. "You need to establish your credentials first. There's a time to negotiate and a time to listen."

Ann Challenger suggests that the best time to negotiate is after you've proved your value on the job. "Get the job first," says the vice president of Challenger, Gray & Christmas, Inc., an executive outplacement firm based in Chicago, "and see how you can make the company better. Then you'll have more negotiating power." ■

Melymuka is a freelance writer in Duxbury, Mass.

THE GREAT PYRAMID OF PERKS

CIO

- Annual bonuses from 40% to 150% of salary
- Stock options
- First-class travel
- Multiyear contracts (availability decreasing)
- Annuity plans, insurance, 401(k) retirement savings plans
- Country club memberships (availability decreasing because of tax crackdowns)
- Multiyear bonus programs that look at performance against specific milestones

VP, SENIOR VP, SENIOR DIRECTOR

- Very good relocation packages; sometimes a lump sum to spend (or pocket) as employee wishes
- Sign-on bonuses
- Guaranteed year-end bonuses of 20% to 50% of salary
- Stock options (possibly)
- Severance agreements

DIRECTOR, MANAGER, KEY PROJECT MANAGER

- Sign-on bonuses from $2,000 to $25,000
- Guaranteed year-end bonuses up to 20% of salary
- Stay bonuses (paid out over several years)
- Extra relocation allowances
- Early reviews tied to bonuses, raises
- Additional vacation time
- Stock options (occasionally)
- Career development opportunities

WHIZ KIDS AT ANY LEVEL

- Training
- Flextime
- Job sharing
- Work-at-home days
- Telecommuting

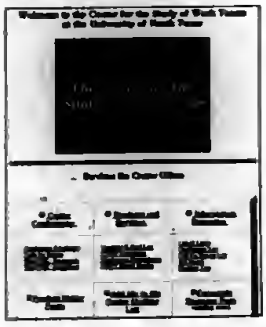
By Leslie Goff

Practical Internet sites for IS managers

Revolution
www.strategosnet.com/revolution/

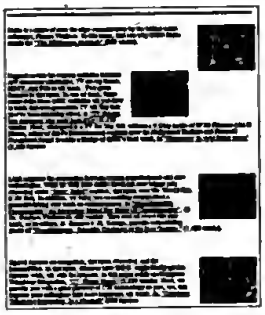
A Web-zine that calls itself *Revolution* is more or less doomed from the start because it sets up unrealistic expectations. That's certainly the case here. For starters, the ideas presented, although interesting, aren't revolutionary. In fact, many of them sound suspiciously like those espoused in another magazine — on the newsstand and Web — called *Fast Company* [reviewed in CW, April 29]. The table of contents even closely resembles the *Fast Company* home page. Second, all the articles posted in July were written by the same individual, Gary Hamel, co-author of the book *Competing for the Future*. Hamel also just happens to be chairman of the site's sponsoring organization, Strategos, a consulting firm. Like *Fast Company*'s founders, Hamel is a regular contributor to the *Harvard Business Review*. He has an interesting take on things — "The age of incrementalism is dead," he proclaims in a long essay on increasing value — but without a range of voices in the publication, the site becomes little more than a well-financed vanity home page.

Center for the Study of Work Teams at the University of North Texas
www.workteams.unt.edu/



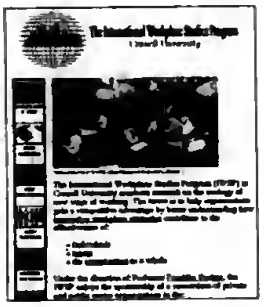
The university, in Denton, Texas, may not have the same name recognition as Harvard Business School, but that shouldn't dissuade teamwork-interested information systems managers from visiting this site. It's a good starting point for anyone who is concerned with forming effective teams, setting team goals, decision making, problem solving and other team-related "soft" skills. It's especially good for those who are seeking information that lacks the bias of a consulting firm's particular methodology. The best resources here are the award-winning papers of IS practitioners who have attended the center's annual conferences, which bring together academia and industry. For instance, check out "Taking Teams From Buddies to the Bottom Line" by Allstate Insurance Co.'s data center team. The site's other top resources for IS managers are the TeamNet E-mail List — a private discussion group for registered participants — and the Annotated Reading List, which makes sound recommendations and offers brief, informative synopses of each book.

21st
www.vxm.com



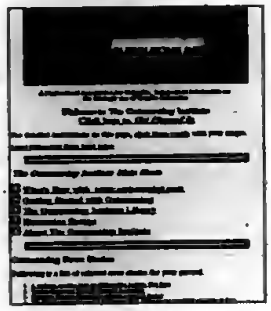
This thought-provoking Web-zine makes a good read for anyone trying to understand the collision of consumer and business technologies. It's divided into six clearly demarcated editorial sections. The most relevant to IS managers are "Dolo," a series of IS commentaries by Franco Vitaliano, described by the magazine as a "techno-ooire" columnist — his July piece examines what ISDN really stands for: "IS Dilemma Network" — and "Speed," which focuses on computers, software, networks and the Internet. Even the sections that aren't specifically business-oriented — such as "Impact," which explores the convergence of the television and the PC, and "Link," which focuses on "the connection between human consciousness and new technologies" — make worthwhile reading for IS managers who want to expand their perspectives. Navigational note: The home page has some pretty nifty, if ambiguous, artwork, but it takes a long time to load without a T1 line. You may wish to skip it and advance directly to the table of contents by adding the extension /21R.9.html/ to the address.

The International Workplace Studies Program
iwsp.human.cornell.edu/



For IS managers whose companies are re-engineering work processes, considering alternative work arrangements such as telecommuting or redesigning their facilities to enhance the work of cross-functional teams, this site is worth a visit. The research here proves that IS should play a critical role in planning and designing workplace changes — after all, it will be facilitating communication and data sharing. Unfortunately, IS-specific information is slim, but proactive managers can get enough of an overview here to understand their role in this process, and they will sound quite up-to-date on the subject when they start attending facilities management meetings. The program, hosted by Cornell University, is sponsored by a consortia of public-sector organizations and private companies, including Steelcase, Inc., Shell Oil, Hewlett-Packard Co., Andersen Worldwide and others. Try to overlook the academic tone and the use of language such as "human ecology." The best bets for IS managers who are just getting started on these issues are the paper "Implementing Innovative Workplaces: Organizational Implications of Different Strategies" — click on the words "the organization as a whole" from the home page — and the research sections titled "Integrated Workplace Strategies" and "Collaborative Team Environments" — both accessible from the home page.

The Outsourcing Institute Forum
www.outsourcing.com/



This isn't the most aesthetically pleasing site, but it's one of the most informative and well-planned sites for IS managers. It offers easy access to a good deal of free, original and actionable content. The Outsourcing Institute is a 3-year-old professional association that calls itself a source for objective, independent information on outsourcing. The site has a little something for everyone, whether they are in the early stages of evaluating outsourcing or already deeply entrenched. Get relevant tips for success, statistics and trends to convince your staff and boss of outsourcing's viability and more than 30 brief case studies that detail a wide range of outsourcing partnerships. A discussion area promises to be a valuable resource if it catches on among 'net surfers. But as of this month, the vast majority of posted queries hadn't received any replies. The institute also presents its own fairly objective reports on topics such as Computer Sciences Corp.'s annual IS survey and a report by International Data Corp. — owned by *Computerworld*'s parent company — that projects the growth in the outsourcing market over the next four years. If you are concerned with outsourcing, or just need to keep up with what your colleagues are facing, bookmark this site.

Information Management Forum
www.infomgmtforum.com/

Here's a site that brings to mind a line from an Elvis Presley song: "Here am I, so close, yet so far, from paradise." The organization's purpose, the home page explains, is "to provide information on how organizations are using information technology for strategic purposes." But this statement sets up expectations that the site doesn't meet. The information here is largely static, consisting of announcements, abstracts of reports and online order forms. Trends 'n Stuff is the only area that offers any significant original content. In early July, the section had an interesting report that dispelled the myth that object-oriented programming is in widespread use among IS departments. ■

Goff is a freelance writer in New York.

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to go to lunch,

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September Workshops

A listing of workshops for IS managers. Most workshops are offered later in the year in other cities. To find the time and location most convenient for you, call the contact phone number.

Information Systems Project Management. King of Prussia, Pa., **Sept. 4-6**; Ann Arbor, Mich., **Sept. 9-11**; San Francisco, **Sept. 16-18**; New York, **Sept. 25-27**; Chicago, **Sept. 30-Oct. 2** — Fee: $1,295 to $1,490.
Contact: American Management Association, New York, N.Y. (800) 262-9699.

Improving Your Internal Consulting Skills: For IS Professionals. New York, **Sept. 4-6** — Fee: $1,295 to $1,490.
Contact: American Management Association, New York, N.Y. (800) 262-9699.

Outsourcing: Issues, Contracts, Negotiations. Chicago, **Sept. 5-6** — Fee: $1,295.
Contact: International Computer Negotiations, Inc., Winter Park, Fla. (407) 740-0700. Fax: (407) 740-0368.

Measuring and Benchmarking IT Performance. Toronto, **Sept. 9-10** — Fee: $995.
Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3880. Fax: (508) 470-0526; E-mail address: ConfReg@dciexpo.com. Web address: www.DCIexpo.com.

Firewalls and Internet Security. Atlanta, **Sept. 9-10**; Kansas City, Mo., **Sept. 11-12**; Philadelphia, **Sept. 16-17**; Boston, **Sept. 19-20** — Fee: $995.
Contact: Data-Tech Institute, Clifton, N.J. (201) 478-5400. Fax: (201) 478-4418. Web address: www.datatech.com.

High Tech Procurement. Washington, **Sept. 9-11** — Fee: $1,395.
Contact: International Computer Negotiations, Inc., Winter Park, Fla. (407) 740-0700. Fax: (407) 740-0368.

Communication and Interpersonal Skills: A Seminar for Technical Professionals. Chicago, **Sept. 9-11**; Atlanta, **Sept. 16-18**; New York, **Sept. 25-27** — Fee: $1,195 to $1,375.
Contact: American Management Association, New York, N.Y. (800) 262-9699.

Fundamentals of Joint Application Development (JAD). Boise, Idaho, **Sept. 9-11** — Fee: $995.
Contact: Bauhaus Consulting Group, Park City, Utah (800) 379-1811.

Systems Analysis and Design for Information and Business Professionals. New York, **Sept. 9-12**; San Jose, Calif., **Sept. 17-20** — Fee: $1,350 to $1,550.
Contact: American Management Association, New York, N.Y. (800) 262-9699.

Software Licensing Agreements. St. Louis, **Sept. 10**; Austin, Texas, **Sept. 19**; Dallas, **Sept. 20**; Chicago, **Sept. 25** — Fee: $495.
Contact: Professional Learning Center, Irvine, Calif. (714) 725-0758.

Project Management: Skills for Success. Washington, **Sept. 10-13** — Fee: $1,595 to $1,995.
Contact: The Learning Tree International, Inc., Reston, Va. (800) 850-9197. Web address: www.learningtree.com.

Identifying and Confirming User Requirements. Los Angeles and Washington, **Sept. 10-13** — For those responsible for identifying user needs in a project. Fee: $1,595 to $1,995.
Contact: The Learning Tree International, Inc., Reston, Va. (800) 850-9197. Web address: www.learningtree.com.

UCLA Extension's Engineering and Management Program. Los Angeles, **Sept. 15-20** — Fee: $1,995.
Contact: UCLA Extension, Department of Engineering, Information Systems and Technical Management, (310) 825-3858. Fax: (310) 206-2815. E-mail address: bcroswhi@unex.ucla.edu.

Preventing Application Meltdown. Boston, **Sept. 16.**
Contact: Hurwitz Consulting Group, Newton, Mass. (617) 894-0845. Fax: (617) 899-2099. E-mail address: info@hurwitz.com.

How to Manage, Motivate and Coach Support Professionals. Washington, **Sept. 16-17** — Fee: $595 to $695.
Contact: Help Desk Institute, Colorado Springs, Colo., (800) 248-5667. Web address: www.HelpDeskInst.com/.

The Project Management Certificate Program — The Kerzner Approach to Project Management Excellence. Albuquerque, N.M., **Sept. 16-17**; Dallas, **Sept. 18-19**; Troy, Mich., **Sept. 24-25.**
Contact: International Institute for Learning, Inc., New York, N.Y. (800) 325-1533.

Quality Review Techniques for Information Technology Professionals. Chicago, **Sept. 16-17** — Fee: $1,195 to $1,375.
Contact: American Management Association, New York, N.Y. (800) 262-9699.

Managing Technical Professionals. Washington, **Sept. 18-19**; Newport Beach, Calif., **Sept. 25-27** — Fee: $1,245 to $1,430.
Contact: American Management Association, New York, N.Y. (800) 262-9699.

JAD Facilitation and Methodology Seminar Using Object-Oriented Software Engineering. Greenwich, Conn., **Sept. 17-19** — Fee: $1,475.
Contact: Pierson Applications Development, Inc., Stamford, Conn. (203) 322-1606. Fax: (203) 329-0173.

Software Project Planning and Management. Washington, **Sept. 17-20** — Fee: $1,595 to $1,995.
Contact: The Learning Tree International, Inc., Reston, Va. (800) 850-9197. Web address: www.learningtree.com.

Business Process Re-engineering. Washington, **Sept. 17-20**; Toronto, **Sept. 24-27** — Fee: $1,595 to $1,995.
Contact: The Learning Tree International, Inc., Reston, Va. (800) 850-9197. Web address: www.learningtree.com.

Strategic IS Planning. Atlanta, **Sept. 18-20** — Fee: $1,350 to $1,550.
Contact: American Management Association, New York, N.Y. (800) 262-9699.

Managing Telecommunications: Technologies Your Company Can't Do Without. Chicago, **Sept. 23-24** — Fee: $1,250 to $1,435.
Contact: American Management Association, New York, N.Y. (800) 262-9699.

Effective Methods of IT Quality, Short-Term Quality Program Development. San Antonio, **Sept. 23-27** — Fee: $1,295 to $1,595.
Contact: Quality Assurance Institute, Orlando, Fla. (407) 363-1111. Fax: (407) 363-1112.

Business Process Re-engineering Seminar. Greenwich, Conn., **Sept. 24-25** — Fee: $875.
Contact: Pierson Applications Development, Inc., Stamford, Conn. (203) 322-1606. Fax: (203) 329-0173.

Healthcare Electronic Commerce Institute (HECI): Fall Sessions for Healthcare Electronic Commerce Technologies. Chicago, **Sept. 25-26.**
Contact: HECI, Beach Park, Ill. (815) 877-3122.

Integrated Supply Chain Management. Palo Alto, Calif., **Sept. 25-26.**
Contact: University Connections, Stanford, Calif. (415) 326-9212. Fax: (415) 321-7101. E-mail address: marian.adams@forsythe.stanford.edu

Internet Security, Access and Firewalls. New York, **Sept. 26-27** — Fee: $995.
Contact: Business Communications Review Enterprises, Hinsdale, Ill. (800) 227-1234. Fax: (708) 323-5324.

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Calendar announcements should be submitted at least eight weeks prior to the event and include the title of the event, dates, location, theme or focus, keynote or major speakers, principal topics and a contact person, organization and phone number.

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Buyer's Guide

Sales force automation tools:

You just gotta have 'em

The technology makes sales force automation feasible, and the market makes it a must-have, even if you can't cost-justify it

By Mindy Blodgett

Jack Frame, vice president of sales at Corestates Bank in Philadelphia, says sales force automation software

Sales force automation is no longer a choice for companies that seek a competitive edge — it's a requirement, according to industry observers and users.

"It's pretty impressive when a sales rep can go into a meeting with all the information they need right at their fingertips," says Jon Sweet, director of information management at Du Charme, McMillen and Associates, Inc. in Fort Wayne, Ind. Sweet's company sells tax consulting services to corporations. "Sales force automation should improve productivity — but you are also at a major competitive disadvantage if you aren't automated today."

And there's one indisputable fact about the sales force automation market: It's growing at a healthy clip.

Sales force automation, *page 78*

Sampler

A sampling of sales automation software vendors:

Top 5 high-end software vendors based on 1994 revenue, as reported by International Data Corp. (IDC):

Sales Technologies, Inc.
(subsidiary of Dun & Bradstreet Corp.)
3399 Peachtree Road, NE
Atlanta, Ga.
(800) 344-6776
Product: Snap

Fastech
450 Parkway Drive
Broomall, Pa.
(610) 359-9200
Product: FastTrack

Brock International, Inc.
2859 Paces Ferry Road
Atlanta, Ga.
(800) 221-0775
www.broc.com
Product: TotalControl

Saratoga Systems, Inc.
1550 South Bascom Ave.
Campbell, Calif.
(408) 371-9330
Product: SPS

Information Management Associates, Inc.
1 Corporate Drive
Shelton, Conn.
(800) 776-0462
Product: Telemar

Other vendors to watch, according to IDC analyst Judith Hodges:

Aurum Software, Inc.
3385 Scott Blvd.
Santa Clara, Calif.
(408) 562-6370
www.aurum.com

Siebel Systems, Inc.
4005 Bohannon Drive
Menlo Park, Calif.
(800) 647-4300
www.siebel.com

Remedy Corp.
1505 Salado Drive
Mountain View, Calif.
(415) 903-5200
www.remedy.com

Trilogy Development Group
6034 West Courtyard Drive
Austin, Texas
(512) 794-5900
www.trilogy.com

Scopus Technology, Inc.
1900 Powell St.
Emeryville, Calif.
(510) 597-5800
www.scopus.com

Sales force automation

CONTINUED FROM PAGE 77

Gartner Group, Inc. in San Jose, Calif., forecasts that the market will grow by about 37%, from $1.1 billion in U.S. sales last year to about $1.5 billion in sales this year.

"And that is conservative," says Wendy Close, an analyst at Gartner. "Some recent numbers show that the market could grow to as much as $9 billion in the next year or so."

At the same time, she says a Gartner survey revealed that about 61% of sales force automation projects fail to show measurable benefits. But analysts say two main benefits of automation — productivity gains and efficiency improvements — are soft benefits and difficult to quantify. Close also says too many companies start out with relatively inexpensive, lower-generation products, such as contact management automation, that provide little more than administrative benefits.

Increasingly, sales organizations see automation as a competitive requirement, not a choice. And the trend is toward more sophisticated, integrated software products that include opportunity management, telemarketing, World Wide Web capabilities, contact management and forecasting for true team-selling capabilities, industry analysts say.

"Companies need to use sales automation through the whole enterprise, incorporating information [ranging from] what the manufacturing side is developing to inventory, forecasting and financial information," says Judith Hodges, an analyst at International Data Corp. in Framingham, Mass.

Some trends to watch, according to industry analysts, include the following:

- Smart companies are joining the trend toward using technology in face-to-face sales meetings, Close says. "Launching video clips in a meeting on your laptop is very impressive," she says.
- Vendors are increasingly offering consultant services as part of their product offerings. Consultants help battle the high failure rate of implementations by helping users zero in on their requirements and goals up front.
- Sales forces, not information systems groups, are driving many implementations. This is a good idea, observers say, because the sales force needs to fully support a project for it to work. And unless the sales representatives are brought in early, they may not buy in as easily, industry analysts say.

What follows are snapshots of those companies that use this hot segment of technology. ■

Blodgett is a *Computerworld* senior writer; she specializes in mobile computing and social issues.

Revlon:

Papers aweigh!

According to Steve Yarvis, senior vice president of government sales at Revlon, Inc., the move to a sales force automation system 18 months ago yielded some hard results for the New York cosmetics manufacturer.

"We saved about $400,000 last year by virtually eliminating all forms of paper, including order forms," Yarvis says.

But automating didn't come cheaply. Yarvis says implementing the program, including buying laptops and meeting other capitalization costs, came to about $1 million. The Revlon government sales division uses software from Fastech in Broomall, Pa., which costs about $2,000 per user.

The 22-member sales force and the more than 75 beauty advisers who are part of the implementation sell cosmetics and other beauty products to stores on Army bases and to other government outlets. By using laptops and the Fastech software, users keep track of inventory, forecast sales and manage contacts.

The automation project has helped the sales force keep track of promotions and additions to the product line. In the cosmetics industry, differences between the summer and fall lines and volatile changes in customer needs for items such as updated lipstick shades can be hard to track, Yarvis says.

Benefits

"The automation has allowed us to analyze our business in ways we couldn't before," Yarvis says. "We have fewer returns because we can be more accurate in our forecasting and inventory control. We know whether a particular promotion is working.

> **"We saved about $400,000 last year by virtually eliminating all forms of paper, including order forms."**
>
> – Steve Yarvis, Revlon

"And we give better service to our customers," he says. "We can give them a better idea of what we have on hand right on the spot."

Challenges

The biggest challenge in the implementation came from a sales force who was resistant to the technology changes inherent to automation, Yarvis says.

"We had a traditional sales force with various levels of computer literacy," he says. "There was an intimidation factor, but after training, the transition went surprisingly well. They realized their jobs were made easier."

Advice to peers

Yarvis advises companies that implement sales force automation to closely analyze systems capabilities before buying.

"For instance, we didn't think about the fact that we couldn't use a 286-speed computer to drive this system," he says. "And you need a very clear set of actionable criteria and a lot of up-front planning."

On Yarvis' wish list is a Windows-based system. The division is doing something about it by upgrading to the Fastech Windows-based software.

Rating

His grade for Fastech: A- or B+

Corestates Bank:

Low-end tools offer high results

Not everyone needs the most sophisticated sales force automation available — what Gartner Group, Inc. calls the highest generation of "technology-enabling selling" tools.

For users such as Jack Frame, a vice president of sales at Corestates Bank in Philadelphia, the lowly contact management software has vastly improved the sales process.

Frame is perfectly happy with the organizational benefits of contact management software. That sets him apart from the demanding users of the more complex sales force automation software by companies such as Aurum Software, Inc. in Santa Clara, Calif., or Siebel Systems, Inc. in Menlo Park, Calif.

Corestates uses Goldmine contact management software from Goldmine Corp. (formerly Elan Software Corp.) in Pacific Palisades, Calif. Act, from Symantec Corp. in Cupertino, Calif., is the best-selling software in the contact management arena.

According to a recent Gartner survey, about 21% of sales force automation users have contact management implementations. One reason for the popularity of such software is price — it can cost as little as $99 per user.

In 1990, Corestates paid about $9,000 for a 100-user pack of software, Frame says. The bank plans to expand usage beyond the roughly 300 users now on Goldmine.

> **"Get creative with the sources and databases you can link to the software."**
> — Jack Frame, Corestates

Benefits

By using contact management software, Frame says he stays on top of business conversations, appointments and callbacks in his job of selling the bank's financial services to businesses.

"We can record and access quickly all the information we need on a customer," Frame says.

Challenges

But Frame says disciplining the sales force to fully use the power of the technology is a continuing challenge.

"Our customer files are not refreshed enough," Frame says. "It is really frustrating to go into a file seeking up-to-date information on a client and to find it isn't as recent as it should be."

Still, utilization has improved over time, he says. One watershed event was last July when about 60 sales representatives made 2,000 calls in one day by using the software database.

"In a business-to-business environment, that is a lot," Frame says.

Advice to peers

Frame advises those users who are investigating contact management software to "get creative with the sources and databases you can link to the software."

On his wish list: a tool bar that would gives users applications such as automatic telephoning.

Rating

Frame rates Goldmine highly.

"On a scale of 1 to 10, I'd say it's right up there," he says.

Rubbermaid:

Honed forecasting makes for competitive edge

When you sell items such as spatulas and laundry baskets to a nationwide network of grocery stores and retail giants such as Wal-Mart Stores, Inc. and The Home Depot, Inc., you need a way to track the constant promotions needed to keep your product out in front.

Prior to this year, the Rubbermaid Home Products Division in Wooster, Ohio — a division of Rubbermaid, Inc. — followed sales progress via fax or the U.S. mail. It was a tedious job because Rubbermaid launches, on average, one product per day. So Lori Vaughn, manager of information systems at Rubbermaid's Home Products Division, decided there had to be a better way.

About two years ago, Vaughn joined a re-engineering team that looked at the home products division. After a period of corporate belt-tightening, Vaughn got the go-ahead to explore automating the 100-strong sales force in January of this year.

One of the aims of the automation was to hone forecasting into a function that would give the sales force "better competitive intelligence," Vaughn says.

With the consulting aid of KPMG Peat Marwick, Rubbermaid settled on Salesoft Pipeline Management software from Salesoft, Inc. in Columbus, Ohio. Rubbermaid also made a deal with IBM PC Co. to buy at bargain prices IBM Butterfly laptops that were being phased out.

> **"When they are with a particular buyer, they can immediately pull up on the laptop the information that is relevant to that buyer."**
> — Lori Vaughn, Rubbermaid

Altogether, Rubbermaid spent about $1 million on the automation, including the software, a server, consulting, programming and training, Vaughn says.

The sales force received the laptops in June, and the entire staff will switch to the Salesoft software in September.

Benefits

Vaughn says Rubbermaid can now better forecast six months ahead, thereby giving the planning department better information for manufacturing.

"And when they are with a particular buyer, they can immediately pull up on the laptop the information that is relevant to that buyer," Vaughn says. "We expect to increase sales productivity, and we've gotten rid of volumes of paper."

One of the reasons for choosing Salesoft, she says, is that the vendor was able to customize the application in a relatively short time — just seven weeks.

Advice to peers

Her advice for launching a product: Have a clear direction, and "don't just automate for the sake of it."

Rating

"I'd rate them highly," Vaughn says of Salesoft.

Client/server suite vendors, such as Oracle Corp. (Redwood Shores, Calif.) and Baan Co. (Menlo Park, Calif.), are also moving into the sales force automation market, according to Hodges.

Some low-end tools that are finding their way into sales applications include the following:

ACT contact manager
Symantec Corp.
(Cupertino, Calif.)

Goldmine contact manager
Goldmine Corp.
(Pacific Palisades, Calif.)

Sharkware contact and activity manager
CogniTech Corp.
(Atlanta)

Packfat personal information manager
Polaris Software, Inc.
(Escondido, Calif.)

Ecco Pro personal information manager
NetManage, Inc.
(Bellevue, Wash.)

Systems integrators and consultants are also a source for help on sales force automation projects, according to analyst Wendy Close in the San Jose, Calif., office of Gartner Group, Inc.

Close cites the following firms as examples of integrators and consultants:

- **Andersen Consulting**
- **Cambridge Technology Partners**
- **Deloitte & Touche**
- **Electronic Data Systems Corp.**
- **Ernst & Young**
- **IBM**
- **KPMG Peat Marwick**
- **Price Waterhouse**

Here are some organizations that outsource application training for sales force automation, according to Close:

ExecuTrain
Alpharetta, Ga.

Personal Computer Learning Center
New York

Productivity Point
Hinsdale, Ill.

Tech Resources Group
Raleigh, N.C.

Pointers

Sales force automation software — These products help the sales professional organize information about territories and specific customers.

Low-tier tools — Low-tier sales force tools target single users and the small business market. They are typically low-cost, easy-to-implement and easy-to-use solutions. Information sharing isn't generally a focus.

Midtier tools — These solutions target midsize sales forces, ranging from five to 50 representatives. They require mid- to high-level support and customization. Also, information sharing is generally supported, at least at the group level.

High-tier tools — These target large sales forces of greater than 50 representatives. They often support multinational sales forces that require a high level of customization and service. Information sharing is a key differentiator. For instance, account information is often managed centrally where it can be accessed by other sales staff or other departments.

Source: International Data Corp.

Conferences and books

Conferences

Field and Sales Force Automation Conference
Boston — Sept 10-12;
Atlanta — Nov. 12-14
www.dciexpo.com/
(508) 470-3880

Books

Sales Automation Software Compendium
By Richard Bohn,
Denali Group, Inc.,
Issaquah, Wash.,
332 pages

Guide to Sales, Customer Service and Marketing Automation
By Barton Goldenberg,
Information Systems Marketing, Inc.,
Washington,
400 pages

Du Charme:

Found consultant implementation useful

Du Charme, McMillen & Associates, Inc. has an advantage as it prepares to roll out a sales force automation project using FrameWork 2.5 software from Sales Vision in Charlotte, N.C.: It is armed with the lessons learned from a previous failed automation project.

Jon Sweet, director of information management, and Tim Cooper, director of information systems at Fort Wayne, Indiana-based Du Charme — a company that sells tax consulting services to corporations — are building on a project that began with a contact management system.

Sweet says that in trying a contact management system first, from a company he won't name, Du Charme discovered the sales force wasn't using the product much beyond checking for electronic mail.

"The other problem was that the system didn't synchronize very well with our database," Sweet says.

Sweet and Cooper don't blame the contact management product for the first unsuccessful implementation.

"We take full responsibility," Cooper says. "We moved too quickly without really thinking through our needs."

"The sales staff will be spending a lot less time on administration."

— Jon Sweet, Du Charme, McMillen

Benefits

Moving more cautiously this time, Du Charme settled on FrameWork. It will give the 50-strong sales force several features, including telemarketing, opportunity, location management, contact management and forecasting. Du Charme will deploy FrameWork 2.5, which costs between $600 and $800 per user, this fall.

This time around, Du Charme chose FrameWork because the software firm bundles consulting fees into its price.

"It really made a big difference to have the help of consultants in implementing the project," Sweet says.

Challenges

One of the challenges of Du Charme's highly customized project is that the company is integrating its entire telemarketing process with sales support.

Sweet and Cooper plan to roll out a prototype for the project in a couple of months. The company is simultaneously moving to a client/server environment, complicating the endeavor.

"But we expect that the salespeople will be better able to qualify prospects with improved efficiency and improved information-gathering capabilities," Cooper says.

"The underlying business need is to provide the client with better service, and this project will do that," Sweet says.

Advice to peers

Sweet's advice: "Don't rush into the arms of a vendor. Really look at what you need."

Schlumberger:

Persuading sales force to use tools — the toughest part

The successful sales force automation project at Schlumberger, Inc. — a company that manufactures electrical metering systems for utilities — is 2 years old.

And Steve Baker, vice president and director of sales and customer service, marvels at how well it went. Schlumberger in West Union, S.C., didn't only automate, it turned its staff into a virtual sales office by taking away their offices and cubicles.

"We did a lot to them at once," Baker chuckles. "It wasn't easy, but in the end, I think the sales force would agree we're much better off."

Baker wanted more than a contact management product, so he chose the relationship and opportunity management product called G2 from Sirrius Systems, Inc. in Norcross, Ga.

"We really wanted something that improved the sales methodology," Baker says.

Baker also liked the graphical interface and query tools in G2, which cost the company about $100,000 for a 48-member sales force based nationwide and in Europe and Asia.

Plan of action

In launching the automation, Baker said that unlike many companies, Schlumberger decided to forgo a pilot.

"The fear is that with a pilot, the sales force won't really buy into it, and, therefore, it will fail," he says. "We just told them, 'We're serious, here are your laptops.' We really committed to it up front."

"We just told them, 'We're serious, here are your laptops.' We really committed to it up front."

— Steve Baker, Schlumberger

The project took only three months to roll out, and training was done by region.

Challenges

The toughest challenge came in convincing the sales force that the automation would improve their work lives, according to Baker.

"They saw having to learn to use a laptop and the new software as added work, as Big Brother watching," he says.

But Baker says he defused resistance by pointing out that the software would greatly assist in qualifying potential customers.

"We used to fly people around, seeding them on what would turn out to be a dead end," Baker says. "Later, the regional manager would tell me that the sale would never have happened. Now we spend more time up front qualifying opportunities, and we end up with more sales."

On his wish list are more analytical tools to allow Baker to keep a closer eye on sales history and reporting. He says Sirrius is working on providing him with that feature.

Advice to peers

His advice for those planning sales force automation is to "go with a product that really enhances your sales functions, not just your record keeping."

Rating

He gives G2 an A.

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In Depth

Browsing

YOUR BROWSER can give you a clear understanding of the World Wide Web — or a fragmented one.

A browser's critical function is to read the Hypertext Markup Language (HTML) of which every Web page is made and to display the page accordingly. When you submit a uniform resource locator, what's actually being returned to you is content and a string of HTML source code that describes to your browser how features should appear. These formatting instructions, or tags, convey document-display information such as font size and image alignment and are contained within < > symbols.

Why does the same Web page look different among browsers when each browser receives the same initial information? Lack of standards. All browsers read HTML, but if yours doesn't understand a particular HTML tag, it ignores that tag. You'll probably still get the content, but it won't look the way the designer intended it. In some cases, the differences are negligible. But in other cases, the browser can't deliver the page at all. Great sites can look lousy through browsers that don't support the necessary features.

How important is formatting as long as the core information is still delivered? That depends who you ask. Web designer Fabrice Guerini says it's very important. "If you are just giving out lists of items from database searches, it is acceptable not to have them aligned exactly how you want. But when you have a site where sharp graphics and page layout are needed for artistic purposes, it is very annoying," he says.

BY FORREST CANON

To illustrate the differences among browsers, we sought a Web page with no sophisticated frames or cutting-edge Java applets, just the basic formatting tags: text centering , image alignment <IMG align=right SRC="rain_lin.gif"> and changes in font size <font size=+2>. Such simple requirements should ensure uniformity from browser to browser, but that's not the case. Jane Scheid, who designed Jane's Brain Page (maui.net/~jms/brainuse.html) for Netscape Communications Corp.'s Navigator, gets frustrated when she sees the page through different browsers, some of which can display only a text version. Web designers say they look forward to the day when standards are clear and strictly maintained.

Jill Angle at Halleck Design Group shares the sentiments of many Web designers. "Market share determines which browsers we focus on," she says. "Netscape's 75%-plus market share and intrepid approach to the 'net certainly puts them ahead of the game." Even so, some designers — particularly those who design for commercial sites — create pages that consider the lowest common denominator to provide an adequate user interface in less-advanced browsers.■

Canon is a freelance writer in Cupertino, Calif.

Tags explained

The William Blake quotation on Jane's Brain Page looks like this when your browser receives it:

**<font size=+2>If the doors of perception were cleansed, the world would appear to man as it is ... infinite.
 — William Blake 1793
.**

Here are what the tags tell the browser:

<font size=+2> Increase font size

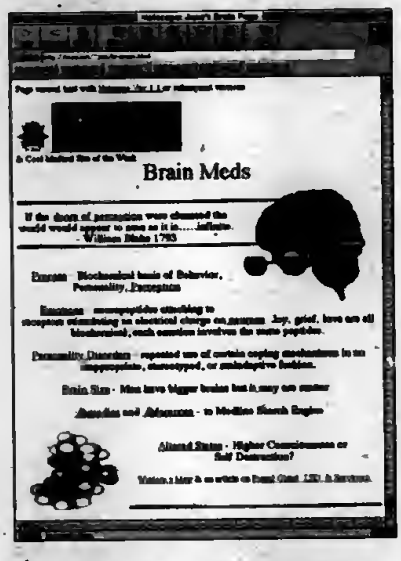
** Begin a link**

** End link (the slash means "end")**

**
 Start a new line**

**
 Start a new line**

Navigator 2.0



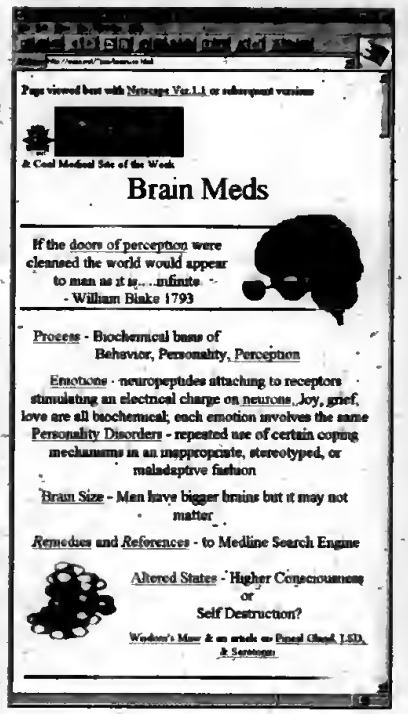
▲ **Jane's Brain Page is optimized for Netscape Navigator**

Twins? Maybe fraternal. Microsoft Corp.'s Explorer displays the page with great fidelity. Some line breaks are different, mostly due to window widths. (All browsers use slightly different default widths.) ▶

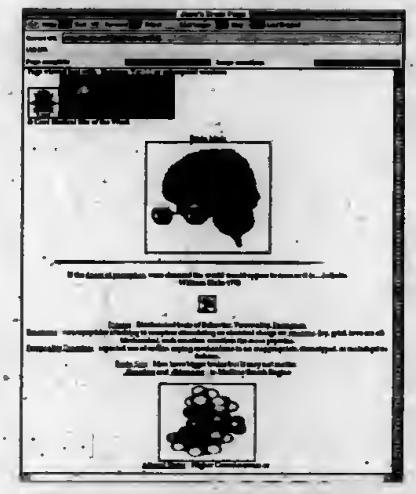
HTML is HTML, right?
Not necessarily. Four looks at the same Web page reveal **a few big differences**

THE BROWSERS

Internet Explorer 2.0

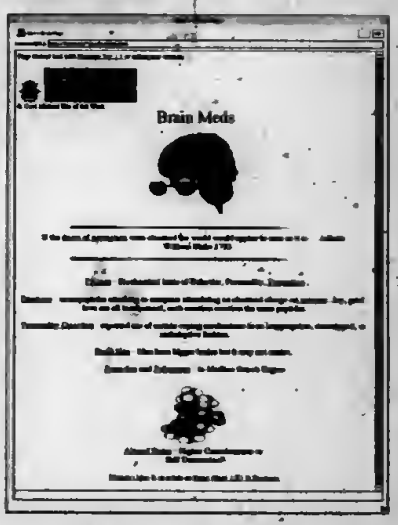


AOL 2.6.1



▲ America Online's browser doesn't support several features. It doesn't understand font-size commands, so it displays the entire document — title and all — in the default size. It's also the only browser in which the link boxes are visible. See the small box beneath the William Blake quote, where there ought to be a colored rule? That can mean the browser doesn't support that graphics format. More often, it indicates a server problem.

Cyberdog 1.0



▲ Apple Computer, Inc.'s browser, like AOL's, centers the illustrations at the top and bottom of the page; the two lack full graphics placement support. Cyberdog also helps illustrate differences in default font sizes and line spacing.

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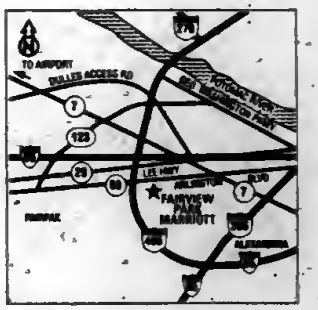

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Tony Barrile, President, Barrile & Associates

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Joan B. Craig, Director, Placement & Career Svcs., U. of Pittsburgh

Proactive Recruitment Techniques
Dave Drugman, President, Bay Cities Research, Inc.

12:15pm **Luncheon Keynote: Industry Trends**
Maryfran Johnson, Executive Editor, Computerworld

Repeat of Concurrent Sessions

Town Hall Forum
Gary Cluff, President, Cluff and Associates

6:00pm **Program ends**

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Luncheon/Keynote Address

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Computer Careers

Uh-oh Cobol

Early hype has painted a bright future for object-oriented Cobol programmers. The present reality: A pretty bleak job market.

By Alan Radding

Object-oriented Cobol would seem to promise a friendly migration path for Cobol programmers who want to move to the object-oriented world. But visual object-oriented Cobol development tools are just now coming to market. And the object Cobol standard won't be officially enshrined until next year. So don't expect a serious job market to develop for two to three years.

The advance drum beating for object Cobol makes it sound like a sure bet. In a survey by Sentry Market Research, Inc. in Westboro, Mass., object Cobol beat C++, Microsoft Corp.'s Visual Basic and Smalltalk as the anticipated development language for client/server computing 24 to 48 months down the road, says Bill Gannon Jr., Sentry's vice president of research. The survey results led Sentry to declare that Cobol and object Cobol will play a strategic role in client/server computing. But this interest won't translate into object-oriented Cobol jobs any time soon.

Object Cobol certainly has much to recommend it. It is a fully functional object language that supports the object model with inheritance, subclassing, encapsulation and polymorphism. But it maintains Cobol's traditional business orientation, explains Drake Coker, chief scientist at Acucobol, Inc. in San Diego.

That gives it a familiar feel to programmers who move from procedural Cobol to object-oriented programming. Vendors such as IBM, Hitachi America Ltd. and Fujitsu America, Inc. are poised to make a big object Cobol splash, although a supporting market of third-party object Cobol tools and class libraries isn't even on the horizon.

Object Cobol primarily will be used in the migration of procedural, host-based Cobol applications to object-oriented and client/server computing.

"[It] will grow slowly. Its acceptance will occur because of the legacy code," Coker says. Expect to see object-oriented Cobol adopted first by those companies with large portfolios of procedural Cobol code, such as the insurance and financial industries. Acucobol's list of customers includes heavyweights such as Caterpillar, Inc., General Electric Capital Corp., Texas Instruments, Inc., Pepsico, Inc., Amoco Corp., Hilton Hotels Corp., Kraft-General Foods, Goldman, Sachs & Co., Shell Oil Co., McDonald's Corp., W. R. Grace & Co., IBM and Intel Corp.

Although the signs may look bright for the future, the present job outlook is discouraging. "There are virtually no opportunities for [object-oriented] Cobol programmers," says George White, consulting systems engineer at Humana, Inc. in Louisville, Ky. Humana already has a large stake in the use of products from Micro Focus, Inc., a leading object Cobol vendor. White routinely searches programmer career forums and posts messages to elicit potential opportunities. Object Cobol consistently draws blanks. "Everybody seems to be taking a wait-and-see attitude," he says.

Recently, the online bulletin boards, forums and Usenet groups (misc.jobs.offered; misc.jobs.contract) where programming jobs typically are posted turned up thousands of hits for C++ and Smalltalk object-oriented programmers and even conventional Cobol programmers. But there were only a few solid leads for object-oriented Cobol jobs.

One example: Berkley Information Services in Luverne, Minn., the information systems arm of W. R. Berkley Corp., is looking for a programmer analyst who is skilled in Micro Focus object Cobol. The property and casualty insurer is in the earliest stages of migrating from mainframe to client/server computing. The successful candidate should have object design and development experience and should be familiar with Cobol. But object Cobol experience isn't required, says Jack Bennett, vice president and systems architect.

Carolyn Rippy, president of Forest EDP Systems, Inc., a consulting and recruitment firm in Boca Raton, Fla., has been peppering the Internet with postings for an object Cobol programmer on behalf of an insurance industry client. The result: "We haven't seen any large demand," Rippy says.

The available jobs aren't paying as well as more popular object-oriented languages. C++ and Smalltalk programmers can earn $70,000 and up annually — or $100 or more per hour for consulting — but Rippy's client is offering $30 to $35 per hour.

Peter A. Weinstein, principal at Weincor in Windsor Locks, Conn., staked out object Cobol early as his systems consulting niche. He attracted a major Hartford insurance company as his lead client. A Cobol programmer by training, Weinstein got interested in object-orientation three years ago. After dabbling in C++ and Smalltalk, he taught himself object Cobol. His object Cobol applications to date have been for the desktop, although he intends to pick up mainframe object Cobol as soon as it's available.

Life as a pioneering object Cobol consultant is far from rich and glamorous. "There isn't a high demand, so I spend a lot of time educating people about [object-oriented] Cobol," Weinstein says. "Without the high demand, there isn't high pay."

But as the market ramps up with product introductions and new players, Weinstein says he expects that demand and rates will rise. ■

1. Familiarize yourself with general object-oriented concepts
2. Start with object-oriented analysis
3. Add object-oriented design
4. After becoming comfortable with object analysis and design, start actual object-oriented programming

Radding is a freelance writer in Newton, Mass.

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Consultant. Duties: plan design program develop and test computer applications applying knowledge of programming techniques and computer systems and utilizing the following applications: C++, C, UNIX, X/Motif, SUN OS, Graphic User Interface, TCP/IP, Programmable Query Language and Object Oriented Programming; write on-line programs, creating on-line screens and other technologies; consult with users to identify current operating procedures and clarify program objectives; prepare and execute system test plans; read manuals, periodicals, and technical reports to learn ways to develop programs that meet user requirements; formulate plans outlining steps required to develop programs using structured analysis and design; analyze review and alter programs to increase operating efficiency and adapt to new requirements; consult with clients to define need or problem; analyze data to advise on or recommend solutions. Applicants should possess an M.S. degree in Computer Science. One (1) year experience in the position, or two (2) years experience as a Research Assistant and/or Programmer. Graduate level coursework must include the following courses: 1) Design & Analysis of Algorithms, 2) Advanced Computer Architecture, 3) Interactive Computer Graphics, and 4) Object-Oriented Software Development. Experience as Research Assistant and/or Programmer must include experience with the following operating systems, languages and applications: C++, C, X/Motif, UNIX, SUN OS, and TCP/IP. Experience must also include object-oriented programming. 40 hrs./wk., 8:00 a.m.-5:00 p.m., $57,500.00/year. Must have proof of legal authority to work permanently in the U.S. Send resumes to ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street, 3 South, Chicago, Illinois 60605, Attn: LEN BOKSA, Reference # V-IL 15739-B. AN EMPLOYER PAID AD. NO CALLS. SEND 2 COPIES OF BOTH RESUME AND COVER LETTER.

Senior Software Engineer. Job Duties: Researches, designs and develops product data management computer systems for use by manufacturing enterprises. Analyzes, both individually and as part of various professional teams, customer requirements; analyzes software requirements to determine feasibility of design within time and cost constraints; consults with hardware engineers and other engineering staff to evaluate interface between hardware and software and operational and performance requirements of systems; formulates and designs software systems and develops and directs software system testing procedures, programming and documentation. Job Requirements: Requires Bachelor's Degree in Computer Science, Electronics and Communication Engineering or Electrical Engineering or equivalent degree as established by written evaluation. Requires 2 years experience in job offered or 2 years experience in software systems design and support. Experience must be in each of the following technologies: (1) supporting, customization and maintaining PDM software, (2) management development of supporting and performance tuning complex applications for UNIX and Microsoft operating systems, (3) knowledge and experience with relational database technologies, (4) knowledge and experience with Object Oriented Programming and Client Server architecture, and (5) developing utilities for UNIX and Microsoft operating systems using C computer language. Experience may be concurrent. 40 hours per week, 8am-5pm, Mon-Fri. $54,000/yr. Send resume and cover letter to (please refer to job order number in resume): B. Abraham #6-182, MDES, 390 North Robert Street, St. Paul, MN 55101

Computer Consultant (Chicago, IL). Analyze client business procedures & system problems. Design, develop, test & implement customized business systems applications. Convert client data to programmable form for electronic processing. In providing technical solutions, use the following computer hardware & software: IBM ES 9000 & mainframe, IBM Personal Computers, MVS/ESA, UNIX, MS-DOS & OS/2 operating systems, DB2 & Oracle databases, CICS user interface, ISPF, QMF, C, SQL Plus, JCL & Cobol II languages, VSAM memory expansion tool, APS case tool, Interfest debugging tool, MF workbench integrated software package, Xpeditor. Evaluate & improve effectiveness of data handling systems & develop specifications for logical & mathematical operations. Plan & prepare technical reports, memoranda & instructional materials for operational systems software. Must have BS in Computer Science & 2 yrs exp in job offered or 2 yrs as Systems Analyst or Programmer/Analyst. Experience must include completion of at least one project involving design, development, testing & implementation of business systems software applications for a large service industry client using each of the following methodologies: IBM 3090 or IBM ES 9000, Cobol II, APS, CICS, VSAM, JCL, MF Workbench, Oracle 6.0, Interfest or Exbug, DB2 & C. 40 hrs/wk, 8:30am-5pm. $43,400/Yr. Must have proof of legal authority to work permanently in the U.S. Send resume/fax in dupl to Illinois Dept of Employment Security, 401 South State St., 3 South, Chicago, IL 60605, Attn: Brenda Kelly, Refs V-IL 15657-K. No calls. Employer paid ad.

PROGRAMMER ANALYST: (2 positions) 40 hrs./wk., 8am-5pm, $36,000/yr. Carry out program specifications preparation, program development, test plan preparation & actual system testing for manufacturing s/w application system in UNIX and Workstation environment utilizing UNIX, C, ORACLE and Visual Basic. Req: Bachelor's degree in Computer Science or Electrical or Mechanical Engineering, and 1 yr exp. in job offered or 1 yr exp. in Systems Analysis &/or S/W Engineering &/or Programming &/or Computer Consulting &/or Research Assistant. Req: exp. in developing s/w systems & with UNIX, C, Visual Basic and ORACLE. Employer is S/W development/consulting firm. Relocation to client sites throughout the U.S. for periods of 6 mos. to 2 yrs. required. "Employer paid ad." E.O.E. Send resume to: 7310 Woodward Ave., Rm. 416, Detroit, MI 48202. Ref: #86196.

MANAGEMENT CONSULTANT - Recommend improved utilization of state of the art electronic commerce (EDI). Provide business/modeling, research, evaluation, analysis, definition of EDI message sets, EDI system configuration, strategic planning, design, system integration. Req: Bachelor's in Comp. Sc., Math, Business or MIS & 2 yrs exp in job or related occupation such as Systems Analyst/Business Consultant. Exp must incl Electronic Data Interchange (EDI: X12, EDIFACT), Contract Logistics (Supply Chain Mngmnt), Communications Protocols. $50,000/yr. 40hrs/wk, Mo-Fri 8:00am-5:00pm. Job Site: Miami, FL. Resume to Job Service of Florida, 701 SW 27th Ave, Rm 47, Miami, FL 33135-3014. Ref. Job Order #FL-1481348.

SOFTWARE ENGINEERING: (2 positions) 40 hrs./wk., 8am-5pm, $55,000/yr. Carry out analysis, design, development and testing of s/w systems for manufacturing applications utilizing IDMS, INGRES, ORACLE, UNIX and TCP/IP. Prepare test plans and scenarios, provide assistance of user documentation. Req: Bachelor's degree in Computer Science or Electrical or Mechanical Engineering and 4 yrs. exp. in job offered or 4 yrs. exp. in Systems Analysis &/or S/W Engineering &/or Programming &/or Computer Consulting. Req: work experience in design of application systems and arch IDMS, INGRES, ORACLE, UNIX and TCP/IP. Employer is S/W development/consulting firm. Relocation to various client sites throughout the U.S. for periods of 6 mos. to 2 yrs. required. "Employer paid ad." E.O.E. Send resumes to: 7310 Woodward Ave., Rm. 416, Detroit, MI 48202. Ref. No. 86096.

COMPUTERWORLD 9th Annual Campus Edition

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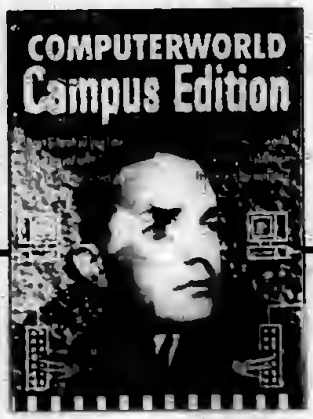
Issue Date: Oct. 31, 1996
Close: Sept.18, 1996



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Industry leading packaging manufacturer seeks a business analyst to help implement and support the ongoing activities for our Decision Support applications, including development of a DATA WAREHOUSE. This individual will help assess new technologies, determine opportunities; and perform all aspects of development in order to support the business functions.

This key role requires 3-5 years experience in a business environment with a minimum of 3 years in application development; working knowledge of PC-based technology, including Windows 3.1; and financial reporting/decision experience. Knowledge of System W, Focus, Micro-Control or similar 4GL packages, Microsoft Access or Query Tools a plus. Well-developed skills in analysis, project documentation and ongoing administrative tasks, understanding of client/server concepts; strong project organization and communication skills; business knowledge, and Bachelor's degree required. The ability to excel independently and as part of a team is critical.

We offer an excellent salary and benefits package. For immediate consideration, please forward your resume and salary history to: TENNECO Packaging, 1603 Orrington Ave., Evanston, IL 60201, Attn: KC-16 Floor. FAX: 847-570-4792.

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A fast growing property and casualty insurance company in Traverse City is filling the following position:

Programmer/Analyst with minimum two years mainframe programming experience in a COBOL/NATURAL/CICS environment. This position offers immediate challenge and growth potential as well as solid benefits package including company matched 401 (k) plan, pension, and stock purchase plan. Salary commensurate with experience. Send resume and salary requirements in confidence to:

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What to make your Northern Michigan vacation more than just a vacation? Clean air, outdoor recreation and an excellent career move could be in your future.

Software Engineer: Research, design and develop computer software systems in conjunction with hardware product development; applying principles and techniques of computer science and mathematical analysis; analyze software requirements to determine feasibility of design within time and cost constraints. Responsible for business information development and computer systems evaluation. The business information development includes analysis, design and coding for Point of Sales, Inventory Control System, and Accounting System for small business with relational database knowledge using Foxpro 2.5 from Microsoft. The computer system valuation includes PC assembly, scheduling testing, and performance analysis; also responsible for Novell network maintenance for running company. Reqs: Bachelor's in Computer Information Systems or Computer Science & 6 month in job offered as 6 months in related occupation as a Programmer, Programmer Analyst, Systems Analyst or Consultant. 3 months of the related exp. or part of a university course as project which included database programming, inventory control and using as studying each of the following: IBM PC, Novell Netware, ORACLE, EXCELERATOR, FOXPRO and ABC Flow Charter. $32,786.40/yr., 40 hrs/wk, 8a-5p, M-F. Send resume to 7310 Woodward Ave., Rm 415, Detroit, MI 48202. Ref. No. 65696. Employer Paid Ad.

Operating Systems Programmer: Programs, tests, designs, develops, and modifies new and existing modules for implementation on a multiple financial information systems and subsystems for use in all aspects of systems software life cycle for loan product analysis. Creates and develops complexed test scripts for testing of such application modules on a PC based Micro Focus Programmer Workbench to be implemented on an IMS and CICS mainframe environment. Develops appropriate financial applications using COBOL and COBOL II in an IBM mainframe DB/DC environment. Uses Xpediter, Abend-Aid and various IBM utilities to implement such systems for integration into Windows-based software application. Insures proper integration of networked system from PC-based through mainframe environment to insure appropriate data flow into such network systems. Required: Bachelor's degree in Computer Science, Computer Engineering or Electrical Engineering. Also requires one year experience in the job to be performed. In lieu of Bachelor's degree and one year experience will accept a Master's degree in Computer Science, Computer Engineering, or Electrical Engineering. $31,000/yr; 40 hrs. week, 9:00 AM to 5:00 PM. Two copies of resume to Maje Brooks, JETS-BMS, ALC Unit, PO Box 7972, Madison, WI 53707-7392. Please reference case: P960201 on application materials.

DRIVEN TO SUCCEED

Volkswagen of America has outstanding opportunities for computer experts in our Information Technology Group at our headquarters in Auburn Hills, Michigan.

Computer Planner/Strategist

To ensure optimal processing of information at every level of our corporation, the selected individual will develop computing strategies and manage projects to migrate from mainframe to a Net-Centric architecture. Other responsibilities include maintaining state-of-the-art knowledge of computing technologies, interfacing with all levels of management on industry trends and coordinating budgetary procedures.

This accomplished professional should have a Bachelor's degree, at least 6-10 years' experience in the computer industry, current knowledge of personal computer, client/server and mainframe technologies, financial analysis experience and excellent project management and planning abilities. (IT-1912)

Service Support Specialist

As part of our Information Technology Service Team, the selected individual will ensure consistent, timely and high quality computing service support and training, and be responsible for operational performance and monitoring. This includes overseeing hardware/software installation and repair and help desk functions.

To qualify, a Bachelor's degree and at least 5-8 years' experience in computer service, support, help desk and training are essential. Knowledge of client/server, Net-Centric and PC computing technology, practices and trends required. This decisive and creative individual must also have superior management, negotiation and analytical skills, and an entrepreneurial attitude. (IT-1910)

Volkswagen offers an excellent compensation package. To apply, please send your resume, with position code, to: **Volkswagen of America, Human Resources Dept. (position code), 3800 Hamlin Road, Auburn Hills, MI 48326.** Equal Opportunity Employer

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  - Oracle Financials
- System design and analysis tools
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- PeopleSoft - PeopleTools
- Oracle 7.x (DBAs and Application Developers)
- PowerBuilder 4.x with Oracle 7.x or Sybase
- Oracle Financials
- IMS DB/DC with COBOL II

Send your resume to: NOLA Computer Services, Inc., 1100 Poydras St., Suite 1250, New Orleans, LA 70163; Toll Free (800) 347-1670 Fax (504) 585-3760
E-mail: nola@mailhost.accesscom.net

TRW Company Staff

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At TRW Inc., we're investing in new IT capabilities to ensure our global high technology competitiveness.
We are implementing a new financial system and are seeking talented systems professionals. Join us and enjoy a broad range of professional challenges and rewards as you work with SAP (R/3) software implementation.

Systems Manager

You'll establish the infrastructure and on-going operations for the new financial system. This will include coordinating system installation efforts and identifying start-up site requirements for hardware, networking and infrastructure support. We require a Bachelor's degree in Computer Science or Engineering with 7 years' minimum experience as well as exposure to financial systems applications/implementation and experience with new or start-up sites. *Reply to Dept. HR-SM*

Test Manager

You'll be responsible for managing test, configuration management, quality assurance and related activities. Requirements include a BS degree in Math, Engineering, or Computer Science, plus 10 years' relevant experience. Knowledge of SAP or other financial software. Windows and S/W test tool development highly desired. *Reply to Dept. HR-TM*

Systems Architect

You'll handle the overall system design/architecture involving financials, T&E applications, HR/Payroll, etc. You'll need a BS degree in Computer Science, Computer Engineering, Math or related curriculum, plus a minimum of 10 years' relevant experience. *Reply to Dept. HR-AR*

Systems Administrator

You will oversee the administration of UNIX, shell scripts, utilities and selected financial software environments. We require a Bachelor's degree or Computer Science, Engineering, or related discipline or at least 2 years' applications' administration experience in a UNIX environment. *Reply to Dept. HR-SA*

Database Administrator

We're seeking a DBA experienced with Oracle and SAP. You must have at least 5 years' related experience and a BS degree or Computer Science, Math, Engineering or related discipline. *Reply to Dept. HR- DBA*

Desktop Administrator

This opportunity for a PC Administrator ensures proper configuration and ongoing operation of all desktop applications, including SAP, T&E applications, Email and other applications (Windows 95, etc.). A Bachelor's degree or 2+ years' experience is preferred. *Reply to Dept. HR-DA*

Applications Development

We're seeking systems programmer/analysts to design and implement a client server based solution for the financial shared services center. Qualified individuals will have experience implementing client/server financial applications. A background or conversion and complex integration is desirable, or are strong business and programmer analyst skills. The following roles will be required:

- **SAP Applications Specialists**
- **Programmer/Analysts**
- **Test Engineers**

Requirements include a degree in Computer Science, Engineering, Physics or related discipline. Three-seven years' multiplatform (mainframe, client/server, etc.) experience desired. *Reply to Dept. HR-AD*

TRW offers an excellent compensation and benefits package. For confidential consideration, please forward a resume with salary requirements (no phone calls, please), indicating appropriate department code to:

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Human Resources - 1E
1900 Richmond Road
Cleveland, OH 44124
Fax: 216 291 7321

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Ripon College System/ Network Manager

The System/Network Manager is a full-time, 12-month staff position reporting to the Director of Computer Services. The position has four major areas of responsibility: Central Systems Management, Network Management, File Server Management, and Campus Backup and Recovery Management. Candidates should have a bachelor's degree in computer science or related technical discipline, with at least two years of management experience in Unix and/or VMS systems and must be able to work effectively in a loosely structured, service-oriented, cooperative environment. Letters of application, resume and names of three references should be sent to **William Updegraff, Director of Computer Services, Ripon College, PO Box 248, Ripon, WI 54971.** Credential review begins on August 1, 1996 and continues until the position is filled. AA/EOE

Programmer Analyst (2 openings) - Plan, develop, test and document computer programs applying knowledge of programming techniques and computer systems, evaluate user request for new or modified programs determine feasibility cost and time required, compatibility with current system and computer capabilities consult with user to identify current operating procedures and clarify program objectives, formulate plan outlining steps required to develop program using structured analysis and design, convert project specifications, using flowcharts and diagrams (step sequence of detailed instructions and logical steps for coding into language processable by computer. Responsibilities include process flow, data flow design, technical support, analysis, design and development using IBM 3090, DB2, CICS, VS COBOL, JCL, QMF, VSAM, MVS/ESA, CSP, FOCUS and EASYTRIEVE PLUS. Reqs Bachelor's in Computer Science, Systems Analysis, Computer Information Systems, Computer Engineering, Electrical Engineering, Electronic Engineering, Computer Electronics Engineering, Mathematics or its equivalent in ed & exp. & 2 yrs exp in job offered or 2 yrs exp in related occupation as a Programmer, Programmer Analyst, Systems Analyst, Software Engineer or Consultant. Will accept 3 yrs of college ed plus 3 yrs exp in the job offered or in a related occupation in lieu of the required ed and exp. Must have some related exp which included analysis, design, development and using each of the following IBM 3090, DB2, CICS, VS COBOL and CSP. $42,940/yr. 40 hrs/wk, 8:30a-5p, M-F. Send resume to 7310 Woodward Ave., Rm 415, Detroit, MI 48202. Ref. No. 72796. Employer Paid Ad.

GEOGRAPHIC INFORMATION ANALYST - NORTH DAKOTA STATE UNIVERSITY - NORTH DAKOTA STATE DATA CENTER. Develops geographic information computer applications using census and other socio-economic information. Develops visual application to select census information from database files. Develops thematic maps utilizing database information for business and residential use. Develops ARC/INFO menus and macros using AML, conversion of spatial data between different software and hardware platforms and general maintenance and upgrading of hardware and software for the North Dakota State Data Center. Imports Tiger/Line files on ARC/INFO and analyzes them for streets, highways, interstates, railroads, airports and more with associated latitude and longitude coordinates. Gathers stored locations and creates INFO files to do address match and networkings. Required: M.S. degree in Computer Science and 1 year experience in the following areas: RISC System 6000 (AIX), UNIX operating systems, DOS, WINDOWS, along with in depth knowledge of PASCAL, C, C++, AML, AVENUE, QUELINGPE(S), SQL, and use of ARC/INFO, ArcView II, dBASE, PARADOX, VisualBasic, MS Access, SPSS; experience in design and development of thematic maps, using TIGER-LINE files. Salary is $27,300 per year with full benefits. Please send resume, letter of application, copy of ts & diploma and transcripts, and names of three references to: Job Service North Dakota, attn: Linda Morrow, RE: Job Order No. JO 6032369, P.O. Box 9829, Fargo, North Dakota 58103. NDSU is an equal opportunity institution.

Software Consultant to develop new application systems, understanding functionality of existing software, analyses of impact of change of database layouts, enhance system with new functionalities & quality assurance of the system. Visit different business locations, study & analyze business data processing requirements & provide software solutions to meet them, consultant & assist software professionals on software design & development in manufacturing, distribution, A planning, finance, medicare, shipping, taxation & export industries using RPG/400, CL400, SQL400, CASE trans like AS/SET, SYNON, PROGEN on IBM AS/400. Reqs Bach in Comp. Sci, Computer, Electrical or Electronic Engg., Systems Analysis, Comp. Info Systems, Math or equiv in ed. & exp. 2 yrs exp in job offered or 2 yrs related exp such as Systems Analyst, Programmer, Analyst or Software Consultant. Will accept 3 yrs college ed plus 3 yrs exp in job offered or related occup in lieu of req'd ed & exp. Must have exp in system development using CASE tools, AS/400, AS/SET & RPF 400, SYNON/2E & PROGEN. $50,000/yr. 40 hrs/wk 8a-5p. Send resume to 7310 Woodward Ave., Room 415, Detroit, MI 48202. Ref. # 86598. "Employer Paid Ad"

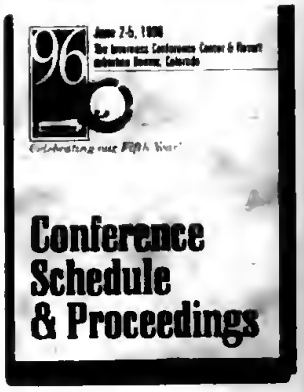
Systems Integrator. Multiplatform system/network integration and administration software and hardware upgrades/installation, user support and systems programming, hardware diagnosis troubleshooting, database administration, GUI, and software development and using DEC ALPHA, HP-UX, Sun OS, Windows NT, TCP/IP, ARS, CRIS, DECnet and mainframes. Reqs: Master's in Computer Science, Systems Analysis, Computer Information systems, Computer Engineering, Electrical Engineering, Electronic Engineering or Mathematics & 2 yrs exp. in the job offered or 2 yrs. exp. in a related occup. as a Programmer, Programmer Analyst, Systems Analyst, Software Engineer, Consultant, System and Network Administrator, Office Services Assistant for Information Systems Lab, Systems Engineer or Research Assistant. 6 months of the experience in the job offered or related occupation must include multiplatform system/network administration, database administration, GUI and software development and using each of the following: DEC ALPHA, HP-UX, Windows NT, TCP/IP, ARS, CRIS and DECnet. $55,000/yr. 40 hrs/wk. 8a-5p, M-F. Send resume to 7310 Woodward Avenue, Room 415, Detroit, Michigan 48202. Include Ref# 86696. "Employer Paid Ad"

Sr. Systems Analyst to design & implement Windows based Point of sale & retail management software, maintain versions previously developed & upgrade & debug applications, analyze user requirements, procedures & problems to automate processing, develop &/or modify programs, review system capabilities to determine if program change is possible, & use C++, Visual Basic, Peradox, MFC, Btrieve, Novell Netware & MS Windows. Reqs: Bach. in Comp. Engg. or foreign equiv., 1 yr exp in job offered or 1 yr related exp such as Programmer Analyst, Programmer or Systems Analyst. Related exp must include using C++, Visual C++, Visual Basic, MFC, Btrieve, MS-Windows, MS-ACCESS & Novell Netware. $42,000/yr. 40 hrs/wk 9a-5p. Send resume to 7310 Woodward Ave., Room 415, Detroit, MI 48202. Ref. #86498. "Employer Paid Ad"

Programmer/analyst (Consultant) Design & dev custom applications according to clients functional reqs using Oracle RDBMS, 4GL app dev tools (forms & reports), CASE method & C/C++ prgmmng. Specify reqs & transform reqs into detailed designs & implement. Provide user support & maintain completed system. Lead project teams, supervise other consultants & provide training. Must have Bachelor's degree in CS, Eng., Info. Systems, or Business & 5 yrs. in job offered (RDBMS consulting), incl. 2 yrs dev Oracle RDBMS business systems. 9am-6pm, M-F. 40 hr/wk. Job site Troy, MI & client site at Battle Creek, MI. $5417/mo. Send resume to CW-178692, Computerworld Inc., PO Box 9171, Framingham, MA 01701-9171

PROGRAMMER/ANALYST Programmer analyst to develop and maintain new accounting and inventory management components and upgrades to company's proprietary Xenix based C language Informix data base manager software products which service all aspects of the long-term health care industry. Test and recommend new PC components for optimum compatibility. Requires a B.S. degree in Computer Science. Requires 9 months experience as a programmer/analyst or 9 months experience in a related software development position. At least nine months experience must include working with Xenix operating system, C Language, Informix Data Base Manager, Accounting software and inventory management software evaluating PC hardware products. 40 hrs/week, 9-5, salary $30,000.00 per year. Applicants should send resumes with SS# to the Indiana Department of Workforce Development, 10 North Senate Avenue, Indianapolis, IN 46204-2277. Attention: Gene R. Replogle. I.D.# 3379885

Systems Analyst (Consultant) Dev & implement operational support systems (eg financial mfg & human resources) based on employers relational database software & 4GL app. dev. tools. Analyze clients' Business Info Flow reqs using CASE formulate enterprise models, & design A develop custom applications. Must have BSCS/EE or academic equiv & min 2 yrs. exp in analysis & design of rel. d/b business systems (or MSCS/EE). Must have completed course (3 units) in each of the following rel databases (intl SQL prgmmng.) dist. systems, networks, operating systems (incl. Unix system prgmmng.), GUIs & computer arch. 2 yrs. dev. exp. in each area will substitute for course. $3458/mo. More than 75% travel thruout Texas & South/Central U.S. Home office in Irving, TX. Apply at the Texas Workforce Commission, Dallas, Texas, or send resume to the Texas Workforce Commission, TEC Building, Austin, Texas 78778. JO# TX7855404. Ad Paid by an Equal Opportunity Employer



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- ❑ Please register me and send me an invoice.

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Best Places to Work 96

First Bank System, one of the largest financial holding companies in the U.S. and recently named by Computerworld as the ***Best Place to Work*** in I.S. of two class based companies, has openings for **Application Managers, Project Leaders, Programmer Analysts, DBAs, System Programmers & LAN Analysts** on 2 major new development projects that will revolutionize customer relations in the banking industry. We also have positions available in on going applications, systems, technical, network & operations support of mature systems formed into key partnerships with the business lines with a focused commitment to technology investment from executive management. We seek energetic, team-oriented professionals who are able to take initiative and work independently on project components while coordinating their efforts with others via excellent communication skills. If you have at least 3 years of experience in Information Systems, a BS/BA in CS, MIS, a related discipline, or equivalent and skills/experience in any of the following technologies

Platforms: IBM Mainframes, AS400, RISC 6000, Tandem & IBM PCs
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Languages: Cobol, Cobol II, CICS, Smalltalk, Powerbuilder, & Visual Basic
Databases: DB2, VSAM, GSAM, IMS, Sybase & Access
Tools: Easytrieve+, Fileid, ADW, Microfocus Cobol, & the Microsoft Suite
Software Packages: Hogan, AMS-ACAPS
Network: Novell Netware, IBM LAN/Server, SNA, TCP/IP; IBM network plus over technology including Frame Relay, ATM, Token Ring and Internet/Intranet technologies.

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Excellent opportunities exist for developers with 5+ years programming experience in a mainframe environment. Strong knowledge of CICS and COBOL required. Communication Protocols (APPC, TCP/IP), UNIX/C and analysis experience a plus. Job Code: SD

QUALITY ASSURANCE ANALYST

This position will prepare test plans and scripts, execute test scripts, record defects and review functional specifications. 1+ years prior experience in a software development quality assurance function is required. A back ground working with one or more of the following is preferred: Windows, DOS, UNIX or Mainframe. Job Code: QAA

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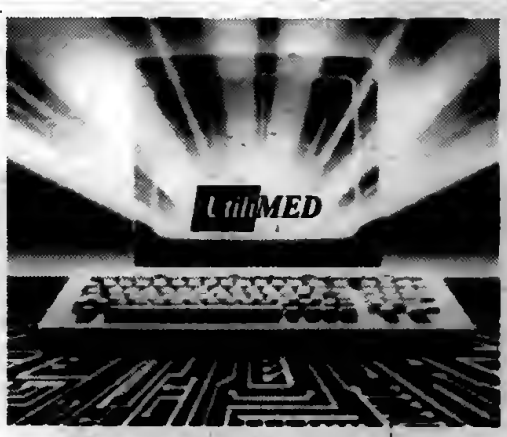

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Career Survey: Project Management Software

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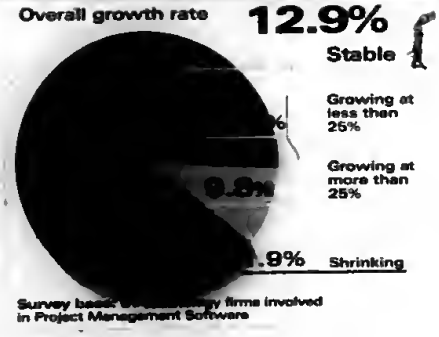

Survey basis: [illegible]gy firms involved in Project Management Software

Survey conducted between August '95 and June '96:

Regional Growth Analysis

21.8%	[redacted]
17.9%	[redacted]
15.1%	[redacted]rsey & Delaware Valley
13.8%	[redacted]tern Lakes
11.9%	Southwest U.S.
11.2%	New York Metro
7.8%	Great Lakes
4.3%	Mid-Atlantic
.0%	Northwest U.S.
.0%	Southeast U.S.
[redacted]	Northern California

CorpTech, a directory publisher in Woburn, Mass., tracks the U.S. 45,000+ technology manufacturers. This survey relates to the 31,370 tracked firms with fewer than 1,000 employees.

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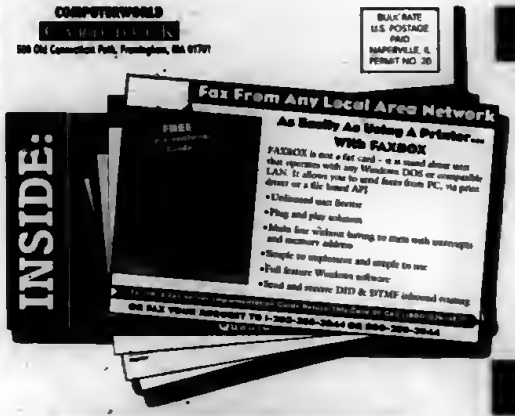

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Marketplace

#@*&^}[-+@ `+&?| (Encryption works)

By Amy Malloy

To keep your house safe from burglars, you might install an alarm, lock the doors and windows or even put your Doberman pinscher in the front yard. Securing your computer systems isn't much different. There are many options available, and using encryption is a popular one. Computerworld *asked Stephen Kent, an expert in the encryption field, to give information systems managers advice about making encryption purchasing decisions.*

Q: Who needs encryption?

A: That's a good but hard question. When I work with clients, I try to have them go through an exercise in which they first identify the information and resources in their environment that they feel are valuable. Next, they try to identify potential threats/adversaries who are motivated to attack them and capable of effecting attacks. Depending on the client's perception of threats and the sorts of attacks these threats imply, cryptography may or may not be appropriate for a given client's environment.

Q: Assuming you are doing basic office computing, when do you reach the point at which you need encryption?

A: It's a matter of perceived threat. Let's say you are worried about hackers. Sometimes hackers plant sniffer programs that listen for passwords, and they use the passwords to break in later. Encryption would protect against that. You could also encrypt files stored on a file server. This would protect the files against a hacker who managed to grab files off the server. Other hacker attacks are based on exploiting flaws in operating system interfaces, and the use of encryption will not necessarily help protect against these attacks. You have to account for an adversary's capabilities when deciding when and where to apply encryption.

Q: How do you begin shopping for products that offer encryption capabilities?

A: That depends on the products. Lotus Notes provides an application environment that incorporates encryption in a fairly seamless fashion, but it protects users only when they employ Notes. One can also buy add-on encryption technology for different desktop platforms, but these are not so convenient to use; they tend not to be well-integrated. But in the second half of this year, I expect to see encryption built in to products in a fashion that will serve two purposes. First, the corporate road warrior can gain access to servers and desktop machines in a secure fashion from anywhere on the Internet, just as if he were connected locally. This will be accomplished by using newly approved Internet standards with a combination of secure communication software in the laptop and firewalls. Second, this technology will support creation of virtual private internets, securely connecting offices of the same company — or of cooperating companies — over the Internet.

Q: How do you make the decision between hardware and software?

A: Software implementations of [encryption] can be adequate for individual user workstations and laptops under some circumstances. Hardware implementations often are more secure than software due to the ability to use real random — not pseudorandom — numbers as inputs to key generation.

Q: How much of a per-user premium would a company pay for basic encryption?

A: For commercial add-on software, prices of $50 to $100 are common, with shareware being very inexpensive. Some crypto software is free. The cost of crypto hardware varies considerably, depending on the implementation, performance and features. ■

BACKGROUND:
Stephen Kent, chief scientist of information security at BBN Corp. in Cambridge, Mass., has been involved in network security research and development activities at BBN for more than 15 years. He is a member of several groups related to that topic, including the Privacy and Security Research Group of the Internet Research Task Force. He has chaired that group since its inception in 1985. He is also the author of technical papers on network security.

KENT'S THOUGHT FOR THE DAY:
"Cryptography is not a magic bullet. It is a tool for helping us secure systems against certain classes of attacks. We have to be cognizant of the threats — of who is out to get us and what they can do. Too often, I hear people suggesting that widespread availability of good crypto and appropriate standards will make our computing environments safe and secure. It's not that simple. Security is a much bigger problem."

Malloy is *Computerworld*'s assistant researcher.

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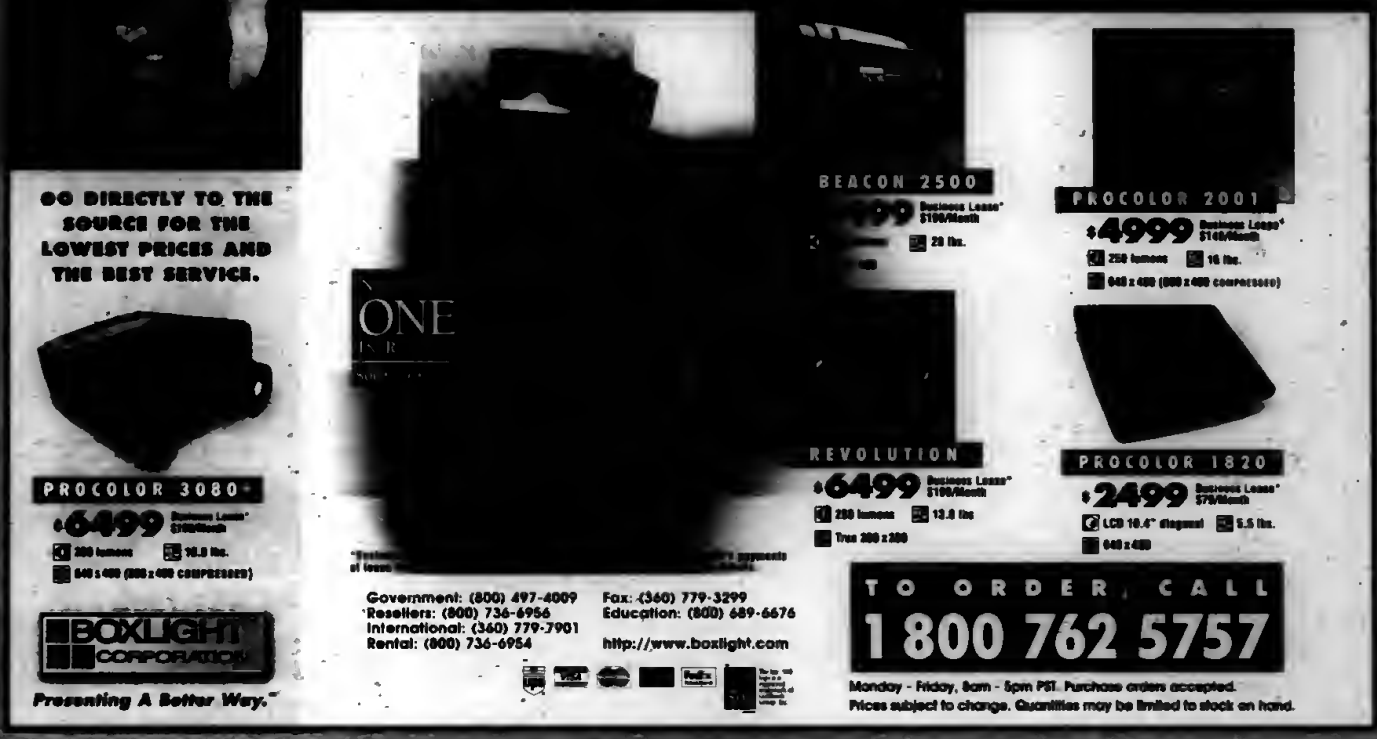

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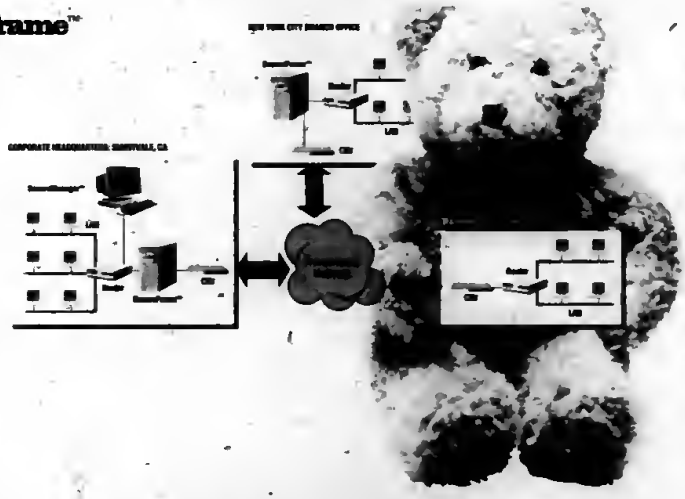

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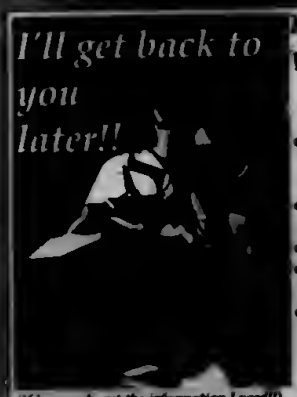

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UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

UNITED STATES OF AMERICA,
Plaintiff,

-vs-

INTERNATIONAL BUSINESS MACHINES CORPORATION
Defendant.

Civil Action No. 56-344 (AGS)

TAKE NOTICE that International Business Machines Corporation ("IBM"), defendant in the antitrust action, has filed a motion for an order terminating the final judgment entered by the United States District Court for the Southern District of New York on January 25, 1956 (the "Final Judgment"). IBM and the United States of America have consented to modify the Final Judgment to establish specific sunset periods for all provisions currently in effect, but the parties have reserved the right to withdraw their consent for at least 90 days after publication of this Notice. Prior to entry of an order modifying the Final Judgment, the Court and the parties will consider public comments. Any such comments on the proposed termination described in this Notice must be filed within 60 days following the publication of the last notice required by the Court's Order Directing Publication. The Complaint, Final Judgment and proposed modification are further described below.

The Complaint, filed on January 21, 1952, alleged that IBM had monopolized, attempted to monopolize and restrained trade in the tabulating industry, in violation of Sections 1 and 2 of the Sherman Act. The Final Judgment was entered by consent between the United States and IBM. The Final Judgment applies to IBM's conduct with respect to tabulating machines and cards, both of which IBM has not manufactured for many years, and "electronic data processing machines" ("computers"). Certain provisions of the Final Judgment have expired or no longer apply to IBM's business. However, other provisions of the Final Judgment continue to apply to IBM's computer business. On June 13, 1994, IBM filed its motion to terminate the remaining provisions of the Final Judgment.

The Court, on January 17, 1996, terminated certain sections of the Final Judgment in their entirety: (a) Sections V (b) and (c), which required IBM to offer to sell at no more than specified prices and to hold for a specified period used IBM machines that IBM acquired pursuant to trade-ins or as a credit against sums then or thereafter payable to IBM; and (b) Section VIII, which specified conditions under which IBM could engage in "service bureau business," as defined by Section II (k) of the Final Judgment. The Court also terminated all other provisions of the Final Judgment as they applied to all IBM computer products and services, except as they applied to the AS/400 and System/360 – 390 families of products and services.

On July 2, 1996, the United States and IBM entered into a stipulation whereby the parties agreed to establish sunset periods for all remaining substantive provisions of the Final Judgment – Sections IV, V, VI, VII, IX, and XV – as they apply to the AS/400 and System/360 – 390 families of products and services. Section IV fulfills the purpose of the Final Judgment in assuring to current and prospective IBM customers an opportunity to purchase machines on terms and conditions that are not substantially more advantageous to IBM than the terms and conditions for leases of the same machines and requires IBM to sell its machines at prices that have a commercially reasonable relationship to the lease charges for the same machines. Section V restricts IBM's ability to re-acquire previously sold IBM machines. Section VI requires IBM to offer to machine owners at reasonable and nondiscriminatory prices repair and maintenance service for as long as IBM provides such service, provided that the machine has not been altered or connected to another machine in such a manner that its maintenance and repair is impractical for IBM and requires IBM to offer to machine owners and to persons engaged in the business of providing repair and maintenance services, at reasonable and nondiscriminatory prices, repair and replacement parts for as long as IBM has such parts available for use in its leased machines. Section VII restrains IBM from requiring that lessees or purchasers of IBM machines disclose to IBM the uses of such machines, from requiring that purchasers of IBM machines have those machines maintained by IBM and generally from prohibiting experimentation with alterations in or attachments to IBM machines. Section IX requires IBM to furnish to owners of IBM machines manuals, books of instructions and other documents relating to IBM machines that IBM furnishes to its own repair and maintenance employees and requires IBM to furnish to purchasers and lessees of IBM machines manuals, books of instruction and other documents that pertain to the operation and application of such machines. Finally, Section XV enjoins IBM from entering into certain agreements to allocate markets or restrain imports into the United States or exports out of the United States and from conditioning the sale or lease of certain machines upon the purchase or lease of any other machine.

"The United States and IBM have agreed to modify the Final Judgment to establish specific sunset periods for all provisions currently in effect. The parties agreed to terminate Sections IV (b), (3) and (c) (7) and Section VII (d) (1) immediately upon entry of an Order by the Court. With respect to the AS/400 family of products and services, the parties have agreed to terminate: (a) Section V (a) immediately upon entry of an Order by the Court; (b) Section IV (except Section IV (c) (3) as it may apply to the provision of operating systems, an interpretation that the United States holds and with which IBM does not agree) and Section VI (a) 6 months after entry of an Order by the Court, and (c) all other provisions of the Final Judgment as they apply to the AS/400, including Section IV (c) (3) as it may apply to operating systems, on July 2, 2000. With respect to the System/360 – 390 and the remainder of the Final Judgment, the parties have agreed to terminate all remaining provisions on July 2, 2001. Thus, under the agreement between the United States and IBM, as of July 2, 2001, the Final Judgment will be terminated in its entirety.

The United States has filed with the Court a memorandum setting forth its position with respect to modifying the Final Judgment as it applies to the AS/400 and System/360 – 390. Copies of the Complaint, the Final Judgment, the Stipulation containing the parties' tentative consent, the memoranda and all other papers filed in connection with this motion are available for inspection in the Office of the Clerk of the United States District Court, Southern District of New York, United States Courthouse, 500 Pearl Street, New York, New York 10007 and at Suite 215, Antitrust Division, Department of Justice, 325 7th Street, N.W., Washington, DC 20530 (Telephone 202-514-2481). Copies of these materials may be obtained from the Antitrust Division upon request and payment of the copying fee set by the Department of Justice.

Interested persons may submit comments regarding this matter within the sixty (60) day period established by Court order. Such comments must be filed with the Office of the Clerk of the United States District Court, Southern District of New York, 500 Pearl Street, New York, New York 10007 with copies mailed to the time of filing to: (a) counsel for IBM, Peter T. Barbur, Esq., Cravath, Swaine & Moore, Worldwide Plaza, 825 Eighth Avenue, New York, N.Y. 10019 (Telephone 212-474-1058); and (b) counsel for the United States, N. Scott Sacks, Assistant Chief, Computers & Finance Section, Antitrust Division, United States Department of Justice, Suite 9500, 600 E Street, N.W., Washington, D.C. 20530 (Telephone 202-307-6132).

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Bottom fishing

When tech stocks take a dive, it may be time to reel in some bargains

By Julie Bort

Technology stocks, always volatile, have become downright explosive these days.

Last year, they were the speculative darlings of Wall Street, a situation that drove up prices regardless of a company's actual performance. Today, technology stocks aren't flying so high. In fact, many of the issues that enjoyed the highest ride last summer have now "corrected," a term financial pundits use when a stock's price drops to a reasonable reflection of the company's earnings.

"Tech stocks in general have been overvalued. Over the past 14 months, those stocks took off at an unsustainable rate. These companies are being brought back to reality," contends Jim Crabbe, president of Crabbe Huson Group, Inc., a contrarian money management firm in Portland, Ore. Contrarians buy stocks when most other investors are selling or vice versa.

While such a situation can be painful for those who bet on continued growth and bought high, it also can be a bargain hunter's dream. To navigate a leaner, uncertain market, high-tech investors should follow a few simple rules.

First, understand the company. "Today, you're buying companies, not technology," Crabbe says. "You need to know the company and understand what it does, what applications it offers, who's competing against it and who are its biggest customers."

A company is a potentially good investment if it has shown both stability and growth in its earnings over the past five years; has more than one large customer; has more than one main product, or is working on more; and has a leadership position in its market.

Second, learn to identify bargains. The key to spotting a bargain is understanding why a stock has fallen.

"Regarding today's volatile tech stocks, there will be some crazy things happening. But if you don't panic and instead concentrate on fundamentals, it will be a great opportunity to pick up some outstanding bargains," says Kathleen Capps, a retired naval officer in London who has been investing in technology stocks for the past five years. "Here's an example of a few in the recent past: Motorola during the brain cancer/cell phone scare and Microsoft during the antitrust worries. These are well-managed, highly profitable companies which sold at extremely cheap prices when they were caught up in general market panics."

Ready for the hook

Here are a few bargain stocks to investigate. All have low price-to-earnings ratios and are well-managed companies, according to Jim Crabbe, president of Crabbe Huson Group

Company	Ticker	Price-to-earnings ratios
Cypress Semiconductor	NYSE: CY	8.3
In Focus Systems	Nasdaq: INFS	7.2
Lattice Semiconductor	Nasdaq: LSCC	11.22

Lucky number

One indicator of a good deal is a low price-to-earnings ratio. For technology issues, this is generally considered to be less than 11. A high price-to-earnings ratio is more than 30, according to several analysts.

A firm might also be an undervalued gem if its market valuation — the stock price multiplied by the number of shares outstanding — is low compared to its assets. This situation is commonly referred to as a low price-to-book ratio.

Finally, be prepared to sell. There is a lot of debate on using technology stocks as long-term investments. However, in especially volatile times, the sell/hold question for specific stocks again falls back to why the price changed. If a fluctuation can be directly attributed to a management problem now corrected, the stock will probably rebound, Crabbe says. One example of such a problem is a weak distribution system.

However, selling might be the right choice if a company has been bumped out of a leadership position, other investors say. "You've got to watch every day and understand about technology. Most often, they are short-term investments. Two days later, some other company might make an announcement that they have a better product. You can't fall in love with these stocks," warns Michael Lowry, a 10-year investing veteran in Colorado Springs who trades primarily in technology stocks.

Bort is a freelance writer in Dillon, Colo.

The Week in Stocks

Gainers

PERCENT

American Power Conversion	34.1
Compression Labs Inc.	33.6
VeriLogic Systems	27.7
Octel Communications Corp.	17.0
Western Digital Corp.	17.0
Tekelec Corp.	16.6
Central Data Systems Inc.	16.1
Gateway 2000 Inc.	15.7

DOLLAR

IBM	8.50
Peoplesoft	6.88
Cascade Communications	6.19
Compaq Computer Corp.	5.75
Seagate Technology	5.50
Dell Computer Corp.	5.13
Gateway 2000 Inc.	4.25
Xylan Corp. (L)	4.50

Losers

PERCENT

SQA Inc.	-31.7
Group 1 Software	-25.9
US Robotics	-25.7
Stratus Computer Inc. (L)	-25.7
IPL Systems Inc. (L)	-23.4
Pinnacle Micro Inc. (L)	-23.3
Iomega Corp.	-21.0
Secure Computing Corp. (L)	-19.2

DOLLAR

US Robotics	-19.00
Stratus Corp.	-11.00
Netscape Comm. Corp.	-9.56
SQA Inc.	-8.25
Security Dynamics Tech.	-7.00
UUNET Tech.	-6.50
Apple Inc.	-6.38
Stratus Computer Inc. (L)	-5.75

Industry Almanac

Autodesk eggs all in one basket

Every company wants a best-selling product, but depending too much on one product's success can be dangerous.

Take **Autodesk, Inc. (Nasdaq: ACAD)**, for example. The company is the leading provider of automation software for PCs. It has 33% of the market share, according to Dataquest, a market research firm in San Jose, Calif. The firm's successful computer-aided design (CAD) tool, AutoCAD, is a de facto standard for PC-based design. It is in its 13th release. Autodesk gets 90% of its revenue from AutoCAD, according to a report by Gary Abbott at Olde Research Corp., a research firm in Detroit.

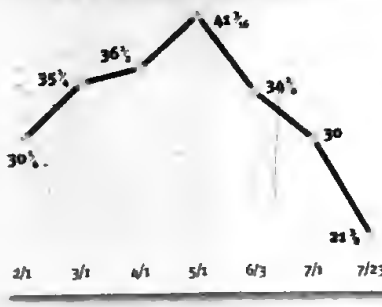
And AutoCAD sales have declined, says Edgar Bierdeman, an analyst at Dakin Securities in San Francisco. Part of the problem is that Release 13 supports object technology, which can't be transferred to earlier releases. This hampers backward-compatibility, Bierdeman says. He rates the stock a hold.

But Abbott has kept his rating of the stock a buy. Despite the slow sales, third-party software developers are building more applications that support Release 13's ARX development environment. That should help to build sales momentum for the product, Abbott says. Abbott expects to see the next release of AutoCAD in 12 to 14 months, which he says will cause a surge in the company's revenue at that time.

Autodesk has started to branch out into multimedia and publishing development products. Abbott says such diversification should begin to solve the company's problem of having "too many eggs in one basket." — *Stewart Deck*

Not quite on autopilot

Slow sales and the crunch on high-tech stocks have driven down Autodesk's share price



Exch	52-Week Range			July 26 1996 3 P.M.	Net Change	Wk Pct Change
COMS	53.63	33.50	3COM Corp	39.25	1.06	2.8
AIT	66.88	47.25	AMERITECH Corp	54.88	-1.25	-2.2
AXE	22.13	12.63	ANIXTER INTL	13.13	0.00	0.0
APTS	12.13	2.75	APERTUS TECH	3.13	-0.13	1.6
T	68.88	49.25	AT & T (L)	51.75	1.63	3.0
ASND	21.75	15.25	ASCEND COMMUNICATIONS	49.25	0.31	0.6
BNYN	13.63	6.00	BANYAN SYSTEMS INC	6.88	0.00	0.0
BAY	50.00	20.25	BAY NETWORKS INC. (L)	24.00	0.63	2.7
BEL	80.38	43.50	BELL ATLANTIC CORP	58.38	1.13	1.8
BLS	45.88	32.63	BELLSOUTH CORP	41.20	-0.25	-0.6
BRKT	32.75	6.88	BROKERTROUT TECHNOLOGY	18.00	4.25	19.1
CS	87.75	48.63	CABLETRON SYSTEMS	61.13	-0.38	-0.6
CSCC	74.75	14.00	CASCADE COMMUNICATIONS	65.00	6.19	10.5
CGRM	25.13	12.25	CERTICIAN COMMUNICATIONS (L)	13.13	1.38	9.5
CSCO	59.13	25.63	CISCO SYSTEMS INC	50.75	1.13	2.2
CLIX	10.88	4.50	COMPRESSION LABS INC	6.69	1.19	21.6
CMRY	12.75	4.00	COMPUTER NETWORK TECH	9.44	0.94	14.7
XCOM	14.50	8.38	CROSSCOMM (L)	8.44	-0.69	-7.5
DIGI	64.00	21.88	DSC COMMUNICATIONS	29.69	-0.19	-0.6
FORE	44.75	15.38	FORE SYSTEMS INC.	28.75	-0.50	-1.7
GDC	21.88	9.13	GENERAL DATACOMM INDS. (L)	10.88	-0.63	-5.4
GSX	40.13	28.00	GENERAL SIGNAL NETWORKS	38.63	1.50	4.0
GTE	45.25	35.63	GTE CORP	41.13	-0.63	1.5
LU	39.25	29.75	LUCENT TECH	35.50	1.50	4.1
MCIC	31.13	20.88	MCI COMMUNICATIONS CORP	23.13	1.00	4.1
MNPI	16.50	5.50	MICROCOM INC (L)	6.63	-1.38	17.2
NETM	34.00	7.63	NETMANAGE INC (L)	9.25	-0.25	-2.8
NTRX	10.88	1.63	NETRIX CORP	7.25	0.25	3.6
NCDI	17.00	2.88	NETWORK COMPUTING DEVICES	3.88	-0.13	-3.1
NWK	42.00	11.50	NETWORK EQUIPMENT TECH (L)	13.63	-0.13	-0.9
NETG	27.63	14.00	NETWORK GENERAL	19.31	-2.69	12.2
NN	74.25	25.00	NEWBRIDGE NETWORKS CORP	47.13	3.00	6.0
NT	55.88	31.50	NORTHERN TELECOM LTD	48.38	3.50	6.7
NOVL	21.63	10.13	NOVELL INC. (L)	11.13	0.00	0.0
NVN	59.25	40.13	NYNEX CORP	44.50	-0.88	-1.9
OCTL	26.25	12.63	OCTEL COMMUNICATIONS CORP	23.63	3.44	17.0
ODSI	43.25	14.50	OPTICAL DATA SYSTEMS INC	19.25	-1.63	-7.6
PAC	15.25	25.88	PACIFIC TELESIS	33.75	-0.25	-0.7
PCTL	44.72	20.75	PICTURETEL CORP	35.38	2.25	7.2
PTON	10.75	2.38	PROTEON INC (L)	2.88	-0.19	-6.1
RACO	7.63	3.88	RACOTEK INC	4.13	-0.38	10.9
RETX	10.88	1.81	RETIX	4.88	-1.13	18.9
SBC	80.25	66.00	SBC COMMUNICATIONS	69.00	-0.25	-0.5
SFG	23.00	11.38	SCIENTIFIC ATLANTA INC	13.25	-0.13	-0.9
SHVA	87.25	20.25	SHIVA CORP	35.13	-11.00	17.0
FON	45.50	29.25	SPRINT CORP	35.13	-0.75	-2.1
SMSC	27.50	10.83	STANDARD MICROSYSTEMS CORP.	10.88	-0.88	7.8
TRIT	13.88	2.38	TELEBIT CORP	12.75	1.63	10.6
USRX	105.50	28.75	US ROBOTICS	55.00	19.00	25.7
USW	48.38	28.38	US WEST INC	30.50	-0.13	-0.6
XIRC	17.50	8.88	XIRCOM	18.13	1.88	13.4
XYLN	76.00	34.00	XYLAN CORP (L)	44.00	4.50	11.6
AALR	10.38	5.88	ADVANCED LOGIC RESEARCH	7.75	0.13	1.6
AAPL	67.50	16.00	APPLE COMPUTER INC	21.75	0.88	6.2
AST6	16.75	6.38	AST RESEARCH INC (L)	5.06	-0.31	-5.9
CPQ	56.75	15.88	COMPAQ COMPUTER CORP	52.88	5.75	12.2
DELL	57.25	23.00	DELL COMPUTER CORP	53.50	5.13	10.6
GATE	41.50	18.00	GATEWAY 2000 INC.	39.50	6.75	13.7
HWP	57.25	35.00	HEWLETT PACKARD CO	44.13	1.25	2.9
MUEI	29.88	9.75	MICRON INTERNATIONAL INC (L)	11.88	1.38	13.1
NIPNY	75.13	49.88	NEC AMERICA (L)	52.50	0.25	0.5
SGI	46.88	20.00	SILICON GRAPHICS	23.38	0.30	2.2
SUNW	67.13	21.13	SUN MICROSYSTEMS INC	53.50	-1.63	-2.9
AMP	13.50	6.75	AMDAHL CORP	6.25	0.19	2.1
DGN	19.13	8.13	DATA GENERAL CORP.	10.50	0.63	6.3
DEC	76.50	30.50	DIGITAL EQUIPMENT CORP (L)	35.38	1.38	4.0
IBM	128.88	83.13	IBM	102.75	8.50	9.0
MDCD	20.25	5.75	MERIDIAN DATA INC	8.88	-0.13	-1.6
NETF	7.50	2.88	NETFRAME (L)	3.00	-0.25	7.7
SQNT	75.38	10.13	SEQUENT COMPUTER SYS.	13.50	0.19	1.7
SEQS	8.50	1.88	SEQUOIA SYSTEMS INC (L)	2.25	-0.13	-5.3
SRA	36.13	17.63	STRATUS COMPUTER INC (L)	19.50	-5.75	-23.7
TDM	15.25	8.38	TANDEM COMPUTERS INC	10.63	0.38	3.7
TRCD	7.56	2.00	TRICORD SYSTEMS	2.94	-0.31	-9.6
UIS	5.25	5.38	UNISYS CORP (L)	5.75	-0.25	-4.2
ADBE	74.25	28.50	ADOBE SYSTEMS INC	51.50	1.50	-4.5
AMSWA	8.75	3.63	AMERICAN SOFTWARE INC	3.88	-0.25	-6.1
APLX	42.50	8.25	APPLIX INC	26.88	-6.88	-19.2
ARSW	82.75	28.75	ARGOSY SOFTWARE	41.50	5.69	-12.0
ADSK	53.00	20.38	AUTODESK INC	23.88	1.00	4.4
BGSS	50.00	29.75	BGS SYSTEMS INC.	42.75	3.25	8.2
BMCS	67.75	32.38	BMC SOFTWARE INC	62.06	3.69	6.3
BOOL	26.75	19.26	BOOLE AND BABBAGE	24.50	2.13	9.5
BORL	21.25	6.06	BORLAND INT'L INC	7.19	0.06	0.9
BOBJY	55.50	16.75	BUSINESS OBJECTS	26.13	-0.13	-0.5
CAYN	11.88	4.50	CAYENNE SOFTWARE INC.	5.38	-0.25	-4.4
CVE	22.88	14.13	CHEYENNE SOFTWARE INC	17.00	-0.75	-4.2
COGNF	27.38	9.75	COGNOS INC.	20.50	1.00	-4.7
CA	54.88	24.88	COMPUTER ASSOCIATES	48.63	3.38	2.9
CVN	15.50	5.75	COMPUTERVISION CORP	7.25	-0.50	6.5
CPWR	40.75	15.50	COMPUWARE CORP	40.38	2.38	6.3
CSRE	32.00	16.13	CONSHARE INC	25.50	2.25	-8.1
COSFF	19.13	8.25	COREL CORP (L)	9.13	0.13	1.4
DWTI	14.50	7.25	DATAWARE TECHNOLOGIES INC. (L)	6.25	-0.25	-5.6
FILE	62.00	20.00	FILENET CORP (L)	21.00	2.75	-11.6
DDDDF	8.25	3.56	4TH DIMENSION	5.13	-0.63	-50.9
FTPS	40.63	5.88	FTP SOFTWARE INC	6.88	0.13	1.9
GSOF	23.00	7.00	GROUP 1 SOFTWARE	10.00	-3.50	-25.9
GPTA	10.50	3.50	GUPTA	4.25	-0.88	17.1
HUM	28.88	15.00	HUMMINGBIRD COMM LTD	16.75	0.13	0.8
HYSW	28.38	9.75	HYPERION SOFTWARE CORP	12.50	1.31	31.7
IRK	16.75	10.00	INFORMATION RESOURCES	11.75	0.50	4.4
IFMX	36.75	16.88	INFORMIX CORP	22.00	-0.63	2.8
INGR	20.13	9.25	INTERGRAPH CORP (L)	10.13	0.13	1.3
LEAF	12.63	1.63	INTERLEAF INC (L)	0.63	-0.44	-8.6
ISLI	26.25	8.38	INTERSOLV INC.	9.00	-1.00	-10.0
INTU	59.25	31.75	INTUIT INC.	37.88	1.38	3.8
LGWX	22.25	9.63	LOGIC WORKS (L)	11.25	-0.50	-4.3
MAPS	24.75	7.50	MAPINFO CORP	9.88	-1.13	-10.2
MATH	9.25	4.61	MATHSOFT	6.50	0.50	8.3
MCAF	55.25	15.00	MCAFEE ASSOCIATES	51.00	1.00	2.0
MENT	22.88	10.88	MENTOR GRAPHICS	12.75	-0.06	-0.5
MHGV	21.25	8.25	MICRO FOCUS	11.38	0.50	6.6
MGXI	19.63	8.25	MICROGRAFX INC	11.00	-0.88	-7.4
MSFT	125.88	29.88	MICROSOFT CORP	119.00	-1.50	-1.2
ORCL	40.38	23.38	ORACLE CORP	38.25	1.00	2.7
PMTC	49.30	25.38	PARAMETRIC TECHNOLOGY	41.38	1.38	3.4
PARQ	16.63	4.38	PARCPLACE SYSTEMS INC	4.63	-0.88	-7.5
PSFT	73.50	31.38	PEOPLESOFT	70.13	6.88	10.9
PTEC	20.38	9.88	PHOENIX TECHNOLOGIES	15.63	-0.13	-0.8
PSQL	38.25	3.13	PLATINUM SOFTWARE	7.13	-1.38	-16.2

Exch	52-Week Range			July 26 1996 3 PM	Net Change	Wk Pct Change
PLAT	26.00	9.25	PLATINUM TECHNOLOGY	10.00	-1.25	-11.1
PRGS	38.00	13.00	PROGRESS SOFTWARE CORP	13.00	7.00	-13.3
RNBO	25.50	14.63	RAINBOW TECHNOLOGIES INC (L)	17.38	1.00	9.4
REDB	61.00	18.25	RED BRICK SYSTEMS INC	24.75	-0.50	2.0
BOSS	8.13	2.19	BOSS SYSTEMS	0.25	-0.38	-60.1
SCOC	12.13	5.30	SCO INC.	6.13	0.25	4.1
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Mac to open Windows

CONTINUED FROM PAGE 1

launched, it would take over the screen and act just as if the user were running a PC with Windows, or a workstation with NT or Unix. Exiting the application would take users directly back to the Mac Finder, the equivalent of the Windows desktop.

Vito Salvaggio, group product manager for Copland, denied that an effort to add Windows capabilities to Copland is in the works.

Spreading the word

But sources at hardware and software manufacturers insisted that Apple officials — including members of the Copland development team — told them directly that Copland will have the capability to directly host other operating systems. Those sources all work closely with Apple and are often briefed on Apple's system software plans.

The sources further claimed this is not a new development effort but one that has been under way for three years. They added that it is the result of Apple's initial attempt to create an infrastructure within Copland's new microkernel-based architecture that would allow older Mac applications to run. According to the sources, Copland developers found that it would be relatively easy to extend that infrastructure to also accommodate other operating systems as well.

The sources said that Apple's initial focus will be on Windows and Windows NT because those operating environments have the most applications that seem to be of interest to Macintosh users.

One user said he was told about the Windows capability by a developer on the Copland team.

"I was told that [Apple Chairman and CEO Gilbert F.] Amelio specifically mandated that Copland run Windows applications," said Victor Nazarian, computer systems director at Harbour Inn Medical Center in Baltimore, which has a mix of Macintoshes and PCs. "It is an important feature for me, and I fully expect to see them put it in Copland. That is what I was told."

Macintosh users currently can run Windows applications by using emulation software from Insignia Solutions, Inc. or several third-party hardware cards.

IBM and Motorola, Inc. also have announced versions of the 603e and 604e PowerPC chips that include built-in emulation for x86 code. Users will still need emulation software with these chips, but the emulation process will be significantly sped up.

First things first

The sources briefed by Apple said the company's vehement denial may stem from the fact that, to fully implement the Windows and NT capabilities, Apple first needs to sign a licensing deal with Microsoft Corp.

According to an executive at a Macintosh clone vendor, Amelio traveled to Microsoft's headquarters at least twice in the past month to iron out a deal whereby Apple would have the rights to the binary code for Windows 3.x, Windows 95 and Windows NT.

Armed with a Windows license, Apple could also preload Windows NT on a forthcoming Apple server or bundle Windows 3.x and Windows 95 on its DOS-compatible and Power Macintosh machines.

Microsoft and Apple officials said their respective companies don't comment on licensing agreements.

One of the sources, an executive at a Silicon Valley Macintosh software developer, said Apple is working on parts of the emulation technology with Connectix Corp., a small developer in San Mateo, Calif.

Connectix reportedly has been working on Windows emulation technology for months and is expected to release a retail version of its emulator at next month's Macworld Expo in Boston. Sources at several Macintosh peripherals makers claim Connectix's emulator can run Windows 95 at Pentium-based speeds on a Macintosh with 8M bytes of RAM and at 486-based speeds on a Macintosh with 6M bytes of RAM.

Connectix officials also declined to comment on any unannounced development efforts.

Head to head

In December, Apple refused to renew its license with Microsoft based on a clause that would forbid Apple from suing Microsoft for any reason. The two wrangled in court for years over Apple's claims that Microsoft copied elements of the Mac OS user interface for use in Windows. Microsoft ultimately prevailed in court.

"It would be a good way for us to run Windows applications if we had to."

"This is great and will help us fight off standardization to a single platform."

"Who cares? It doesn't make the Mac more compelling for us."

"This is a short-term fix that only stops erosion of the current Mac installed base."

"This is risky because it could prevent Mac developers from doing software for the Mac since their Windows product could also run on the Mac."

Defections key

Observers speculated that the move to enable Copland to run Windows applications was prompted by a rise in the number of corporate Macintosh users who have defected to Windows.

"This [capability] negates the claim that the Mac should be thrown over because there are [fewer] applications that run on it," said John Papa, a partner at The Carson Group, a financial services firm in New York.

One financial analyst said a Windows option could be a "brilliant move" for Apple.

"Apple is facing an all-out assault from IS managers who want to standardize on the Wintel platform. Apple needs to be able to better coexist," said Charles Wolf, vice president of equity research at CS First Boston, an investment bank in New York.

Stephen Priest, director of hospital information systems at Dartmouth Hitchcock Medical Center in Lebanon, N.H., said with a mix of 3,000 Macintoshes and 2,000 PCs, he would welcome the ability to run Windows applications under Copland.

"Some of our software is Windows-only, and if we want to continue to expand our Macintosh use, then this could put us in a better position," he said.

Yet at least one user said it was a lousy idea.

"There are enough complications in the Mac environment right now, and I'm happier when Windows is under my control and right where I want it," said David Pensak, senior research fellow and principal consultant at Du Pont Co.'s advanced computing technology group in Wilmington, Del. The group has 2,500 Macintoshes and 2,500 PCs.

Others pronounced the idea the death of the Macintosh platform.

"[Apple] might feel like they have no choice but to do this, but they would be destroying the market for themselves," said Amy Wohl, editor of "TrendsLetter," an industry newsletter in Narberth, Pa. "To be a viable mainstream platform, there has to be a raison d'etre for software developers to do applications that are uniquely suited to your platform. This takes that away."

Others agreed.

"This is a very risky strategy. It could cause the Mac application base to fade away," said Chris Le Tocq, an analyst at Dataquest, a market research firm in San Jose, Calif.

Operating systems

"The reality of the situation is incrementally positive, but it doesn't reverse the momentum. It only delays the migration [to Windows] of the installed base," said Kurt King, an analyst at Montgomery Securities, Inc., an investment banking firm in San Francisco. "This solution doesn't address the Mac's larger problems. [For example,] there is just no reason for non-Mac users to buy a Mac. And that is what Apple needs to address to be a long-term player."

An IS manager at a large West Coast manufacturing company that has more than 1,000 Windows-based computers said that even if Apple has a license for Windows, it wouldn't persuade him to purchase Mac OS-based machines.

"Who cares? There is still no compelling reason to buy a Mac. Windows can do everything that a Mac can do. It would have no effect on me. Game over," he said.

Digital juices up storage systems

By Jaikumar Vijayan

Digital Equipment Corp. this week will announce a series of enhancements to its line of enterprise storage products.

The highlight will be StorageWorks Enterprise Storage Array, Digital's storage architecture that lets users scale their systems from 150G bytes to 10T bytes through snap-in modules.

Also included in the announcement will be several special service offerings, including easier ordering processes, free on-site installation, enterprise management tools and faster controllers.

StorageWorks is supported on a number of platforms, including Digital's Alpha and VAX and those from IBM and Sun Microsystems, Inc.

Change of course

"Up to now we have always custom-configured these arrays according to an individual customer's needs. Now we are preconfiguring and optimizing it" for different workloads, said Kirby Wadsworth, a director at Digital's StorageWorks group. With one part number, customers will be able to order a preconfigured array tuned for specific applications.

Included with each array is StorageWorks Command Console configuration and management software.

"Very few users in the world are going to have the need to scale up to 10T bytes, but that kind of scalability is very impressive" in the open systems arena, said Anders Lofgren, an analyst at Giga Information Group in Cambridge, Mass.

"Most of the large [storage] vendors are going this route in terms of trying to cover the enterprise and access all the storage on a network," said Farid Neema, president of Peripheral Concepts, Inc. in Santa Barbara, Calif.

alt.cw

[Sic] puppies

Laurence Boxer, professor of computer and information sciences at Niagara University in New York, sends along these quotes taken from papers his students have written over the years.

On artificial intelligence:

Computers have not yet reached a point where they can think; however, computers are now thinking about thinking.

On computers and crime:

It was very interesting to read the article on computers and crime because as a criminal justice major, I am interested in all kinds of crimes.

On computers and communications:

Communicating can be traced back as far as 1844 when Samuel Morse invented the telegraph.

On technology:

In just 47 years, technology has bettered itself...

On programming languages:

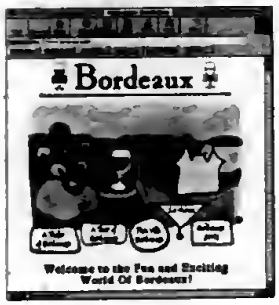
It was later learned that Pascal was useful.

On word processing:

I write a lot of papers, and I would much rather typoe [sic] them on a computer than a typewriter.

Making mistakes on a computer are much easier to correct than that of a typerwriter [sic].

With a fruity bouquet



The Bordeaux Wine Council is trying to entice some Generation X taste buds with its World Wide Web site (**www.berdeaux.com**). There's a tour of France's wine country and a section for wine dummies that demystifies the Bordeaux ordering experience. Also included is a vintage chart, so you don't have to fake it when you say, "Ah yes, 1955. A very good year."

For an iconoclastic, antisnob look at "real wine for real people," check out *Smart Wine* magazine's site (**smartwine.com**). Besides wine reviews "with no twisted foo-foo language," the site profiles the drinking habits of infamous dictators and recommends wines for fast food and TV dinners.

Businesses and consumers that want to organize their wine cellars can find inventory software at Web sites such as CollectWare (**www.a1.com/cellar/**), Claret Software (**www.valley.net/claret/**) and Almost Vertical Software.

Cadavers are yucky. *So Visible Productions in Denver has developed a detailed computer model of the human body that can be dismantled, rotated or altered to show wounds and diseases. Possible applications include medical training, computer animation and multimedia presentations, such as a virtual reality tour through the body.*

Digital Frontiers

Selling goods and services over the Internet may be the wave of the future, but U.S. companies that are already doing it are confused about when to charge state and local sales taxes.

New York accounting firm KPMG Peat Marwick found that 90% of 291 firms polled want governments to clarify the tax implications of cyberspace. "Taxation of electronic commerce varies from state to state, so determining who is responsible for paying those taxes becomes very complex," said Kent Johnson, a KPMG expert on sales taxes.

About two-thirds of the companies complained that tax laws are ambiguous for online shopping, and 20% of the finance executives didn't even know if their company's Internet-based sales are subject to sales taxes.

Inside Lines

Don't take my Kodachrome away

Intel CEO Andy Grove could be called Andy Gruff for his caustic wit and no-nonsense attitude. But he was almost giddy last week when music legend Paul Simon came up to him at Intel's Internet Media Symposium. Grove chatted amiably with Simon and insisted that a photographer get their picture together. After Simon walked off, Grove emphatically told the photographer to make sure she sent him copies of the photo. "If you don't do this, I will never pose for you, ever," he threatened.

You can call me Al

When we caught up with Simon, he refused to talk about why he was there. He refused, in fact, to acknowledge he was Paul Simon. "You think I'm Paul, don't you? I'm not. I'm his brother Ed." Can we say, "identity crisis"?

Computers? Oh yeah, we sell them

If you think Sun has gone all slap-happy about Java, you apparently have some company in Sun's executive offices. Ed Zander, the planetary ruler of Sun's computer unit, heads out on a "back to basics" press tour this week to remind people that the company still sells workstations and servers. Of course, the big question is whether Zander himself will be selling computers much longer or if he'll be moving on to run Bay Networks, as rumored.

Who was that graffiti artist?

Last week, a highway billboard in Novell's hometown of Salt Lake City advertising rival Microsoft's Windows NT Server was mysteriously defaced. The unknown graffiti artist covered the NT Server logo with bright red spray paint and replaced it with Novell's URL on the World Wide Web. All's fair in love, war and marketing.

Olympic flame burns Candle Corp.

While IBM scrambled last week to fix its highly touted Olympics information systems network, other Olympics vendors apparently were caught up in the Atlanta maelstrom as well. John Nordin, CIO at Candle, reports that his network manager was working on a problem with frame-relay service provider Sprint. When the network manager called to talk with the person most familiar with Candle's needs, he was told that the person was out of town managing the vendor's Olympics commitment in Atlanta. Nordin was not amused. "I realize we're not in the high-tech business or in a life-threatening business," Nordin said. "But we are now planning our problem resolution around the needs of the Olympic venues. And they haven't even sent us an Olympic T-shirt."

ISDN finally makes itself useful

Who's the biggest customer for Telecom Italia's Integrated Services Digital Network (ISDN) videoconferencing service? The Italian Ministry of Justice, that's who. Since the beginning of the year, more than 100 Mafia witnesses, known as "pentiti" (repentant ones), have testified via an ISDN videoconference link from 30 secret locations.

We heard about a little daylight thievery last week from a locked and secured building of a prominent computer vendor. Two guys apparently slipped in to the building on the heels of legitimate employees and picked up a pair of laptops and a few desktop systems. They bundled them outside to their parked getaway car, which was conveniently waiting in the "No Parking" zone in front. Apparently, they chatted with the security guards, who are used to seeing system engineers carting out demonstration equipment. Still unclear is whether the guards actually helped load the stolen goods in the car. Maybe they're clever enough not to volunteer that detail. If you have anything you'd like to send to news editor Patricia Keefe, preferably news tips, call her at (508) 820-8183 or send E-mail to patricia_keefe@cw.com.

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(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NetX/Telap

App. Dev. Products ❑ Yes ❑ No
Networking Products ❑ Yes ❑ No

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E.	500 – 999	❑	❑
F.	100 – 499	❑	❑
G.	50 – 99	❑	❑
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(d) Unix (h) NetX/Telap

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Networking Products ❑ Yes ❑ No

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F.	100 – 499	❑	❑
G.	50 – 99	❑	❑
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K.	1 – 9	❑	❑

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E. 500 – 999	❑	❑
F. 100 – 499	❑	❑
G. 50 – 99	❑	❑
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70. Mining/Construction/Petroleum/Refining/Agriculture
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
90. Computer/Peripheral Dealer/Distributor/Reseller
99. Other _____

2. TITLE/FUNCTION (Circle one)

IS/MIS/DP MANAGEMENT
19. Chief Information Officer/Vice President/Assistant VP IS/MIS/DP Mgmt.
21. Director/Mgr. MIS Services, Info. Center
22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr./PC Mgr., Tech. Planning, Administrative Services
23. Dir./Mgr. Sys. Development, Systems Architecture
31. Programming Mgmt., Software Developers
41. Engineering, Scientific, R&D. Tech. Mgmt.
80. Sys. Integrators/VARs/Consulting Mgmt.

CORPORATE MANAGEMENT
11. President, Owner/Partner, General Mgr.
12. Vice President, Assistant VP
13. Treasurer, Controller, Financial Officer

DEPARTMENTAL MANAGEMENT
51. Sales & Marketing Mgmt.
70. Medical, Legal, Accounting Mgmt.

OTHER PROFESSIONAL MANAGEMENT
80. Information Centers/Libraries, Educators, Journalists, Students
90. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply)

Operating Systems
(a) Solaris (e) Mac OS
(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NetWare

App. Dev. Products ❑ Yes ❑ No
Networking Products ❑ Yes ❑ No

4. How many people are employed at this location and in your entire organization, including all of its branches, divisions and subsidiaries?
(Select only one per column.)

	1. At this location	2. Entire Organization
A. 20,000 +	❑	❑
B. 10,000 – 19,999	❑	❑
C. 5,000 – 9,999	❑	❑
D. 1,000 – 4,999	❑	❑
E. 500 – 999	❑	❑
F. 100 – 499	❑	❑
G. 50 – 99	❑	❑
H. 20 – 49	❑	❑
J. 10 – 19	❑	❑
K. 1 – 9	❑	❑

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